

**SONY**

VIDEOCASSETTE RECORDER

**BVW-75P**



**BETACAM SP**™

MAINTENANCE MANUAL

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Serial No. 14381 and Higher

EBU N-10 LEVEL

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## Volume 2

- 15. BLOCK DIAGRAM
- 16. SCHEMATIC DIAGRAM
- 17. PRINTED WIRING BOARDS
- 18. SEMICONDUCTOR ELECTRODES
- 19. SPARE PARTS AND FIXTURE

# SECTION 1 INSTALLATION

Be sure to install the BVW-75P in locations satisfying the required operational environment described below to assure the BVW-75P's superior performance and to maintain the excellent serviceability and accessibility.

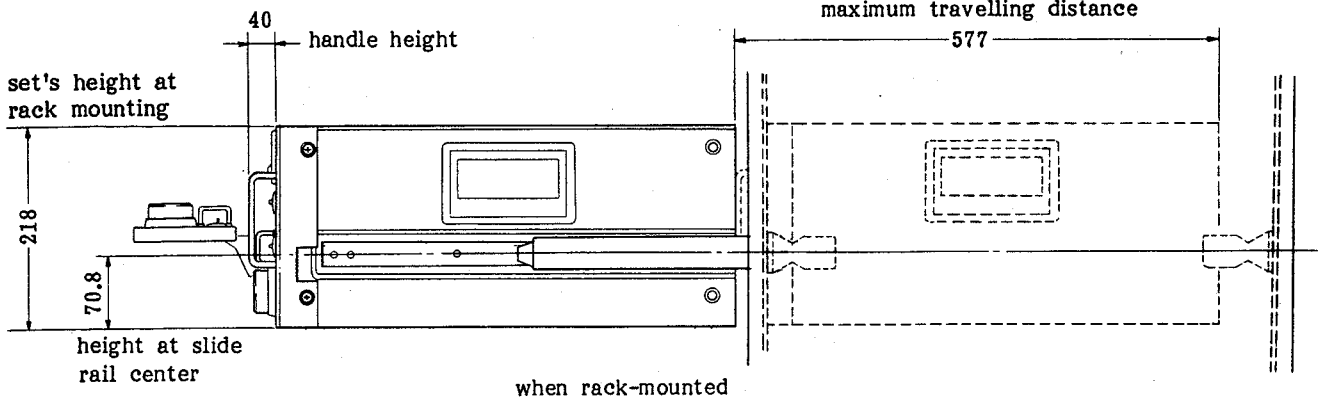
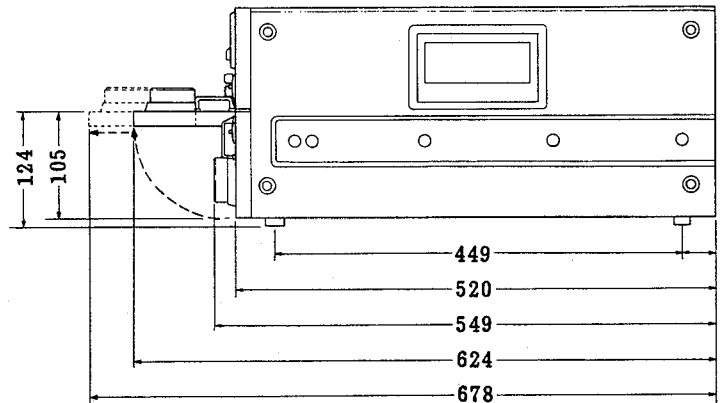
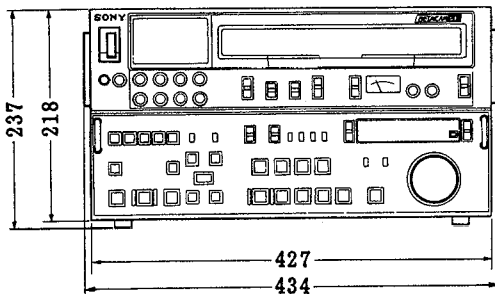
## 1-1. OPERATIONAL ENVIRONMENT

1. Operating temperature:  
5° C to 40° C  
(Good air circulation is essential to prevent internal heat build-up. Place the unit in locations with sufficient air circulation. Do not block the ventilation holes on the cabinet and the rear panel.)
2. Storage temperature:  
-20° C to +60° C
3. Locations to avoid:  
Areas where the BVW-75P will be exposed to direct sunlight or any other strong lights.

- . Dusty areas or areas where it is subject to vibration.
- . Areas with strong electric or magnetic fields.
- . Areas near heat sources.

## 1-2. INSTALLATION SPACE

1. The outer dimensions of the unit are shown in the figure below. The rear side must be at least 40 cm from the wall for ventilation and maintenance.
2. When the unit is operated on a desk or similar condition, assure that the clearance above the unit is at least 40 cm to provide accessibility to the printed circuit boards and other mechanical parts. Note that it is not necessary to provide the space when the unit is mounted in a rack since the printed circuit boards can be repaired after it is pulled out.



Unit: mm

### 1-3. OPERATING VOLTAGE

90 V to 265 V

48 Hz to 64 Hz

Power consumption : 240 W

### 1-4. CONNECTION CONNECTORS

When external cables are connected to the various connectors on the connector panel during maintenance, the hardware listed below (or equivalents) must be used.

Panel Indication	Connection Connector
VIDEO INPUT REF VIDEO COMPONENT 2 (Y, R-Y, B-Y)	1-560-069-11 PLUG, BNC, MALE
DUB/COMPONENT 1	1-562-159-00 PLUG, 12P, FEMALE
VIDEO OUTPUT 1/2/3 REF VIDEO COMPONENT 2 (Y, R-Y, B-Y)	1-560-069-11 PLUG, BNC, MALE
DUB/COMPONENT 1	1-560-995-00 PLUG, 12P, MALE
AUDIO INPUT CH-1/CH-2/CH-3/CH-4	1-508-084-00 CONNECTOR, XLR, 3P, MALE
AUDIO OUTPUT CH-1/CH-2/CH-3/CH-4 SELECTED : CH-1/CH-3 : CH-2/CH-4	1-508-083-00 CONNECTOR, XLR, 3P, FEMALE
TIME CODE IN	1-508-084-00 CONNECTOR, XLR, 3P, MALE
TIME CODE OUT	1-508-083-00 CONNECTOR, XLR, 3P, FEMALE
MONITOR	1-506-161-00 CONNECTOR, 8P, MALE

Panel Indication	Connection Connector
TBC REMOTE	1-561-610-21 CONNECTOR, 15P, FEMALE and 1-561-929-00 JUNCTION SHELL
REMOTE-1 IN (9P) REMOTE-1 OUT (9P)	1-560-651-00 CONNECTOR, 9P (M) and 1-561-749-00 JUNCTION SHELL, 9P
REMOTE-2 (36P)	1-508-852-00 CONNECTOR 36P, MALE

## 1-5. INPUT/OUTPUT SIGNALS OF THE CONNECTOR

### Component input/output parameters

#### Input

##### DUB/COMPONENT 1

Input impedance  
: 75 ohms

Input video amplitude  
: 100/0/100/0 color bars

Luminance with sync  
: 1.0 V p-p

Color difference  
: 0.7 V p-p

##### COMPONENT 2

Input impedance  
: 75 ohms

Luminance with sync  
: 1.0 V p-p

Color difference  
: 0.7 V p-p

#### Output

##### DUB/COMPONENT 1

Output impedance  
: 75 ohms

Output video amplitude  
: 100/0/100/0 color bars

Luminance with sync  
: 1.0 V p-p  $\pm 2\%$

Color difference  
: 0.7 V p-p  $\pm 2\%$

##### COMPONENT 2

Output impedance  
: 75 ohms

Output video amplitude  
: 100/0/100/0 color bars

Luminance with sync  
: 1.0 V p-p  $\pm 2\%$

Color difference  
: 0.7 V p-p  $\pm 2\%$

### Composite input/output parameters

#### Input

Input impedance  
: 75 ohms

Reference video amplitude  
: 1V p-p

Composite video amplitude  
: 1V p-p

#### Output

Output impedance  
: 75 ohms

Reference video amplitude  
: 0.3 V p-p (BS)

Composite video amplitude  
: 1V p-p

### Audio input/output parameters

#### Input

Audio line input level  
: -10 to +32 dBs (nominal: +4 dBs), 600 ohms/10 kohms, balanced

Microphone input level  
: -74 to -32 dBs (nominal: -60 dBs), 600 ohms/3 kohms, balanced

#### Output

Audio line output level  
:  $-\infty$  to +14 dBs (nominal: +4 dBs), 600 ohms, balanced

Monitoring output level  
:  $-\infty$  to +14 dBs (nominal: +4 dBs), 600 ohms, balanced

Headphones output level  
:  $-\infty$  to -12 dBs, 8 ohms, unbalanced

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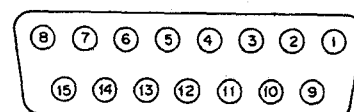
The input/output level of a component signal conforms to the EBU N-10 standard.



## TBC REMOTE

Pin No.	Description	Operating Voltage	IN/OUT
1	SYNC CONTROL	-5 V to +5 V	IN
2	HUE CONTROL	-5 V to +5 V	IN
3	SC CONTROL	-5 V to +5 V	IN
4	VIDEO LEVEL CONTROL	-5 V to +5 V	IN
5	SETUP CONTROL	-5 V to +5 V	IN
6	CHROMA LEVEL CONTROL	-5 V to +5 V	IN
7	-12 V	-12 V	OUT
8	GND	—	IN/OUT
9	FRAME GND	—	IN/OUT
10	NC	—	—
11	NC	—	—
12	NC	—	—
13	Y/C DELAY CONTROL	-5 V to +5 V	IN
14	NC	—	—
15	+12 V	+12 V	OUT

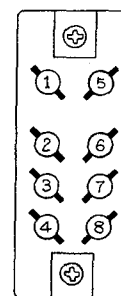
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TBC REMOTE

## MONITOR

Pin No.	Output Signal
1	AUDIO MONITOR OUT (X)
2	VIDEO OUT (X)
3	—
4	—
5	AUDIO MONITOR OUT (G)
6	VIDEO OUT (G)
7	—
8	—



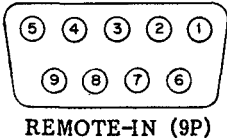
MONITOR



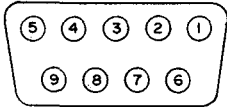
REMOTE-1 IN (9P)/REMOTE-1 OUT (9P)

Pin No.	Controlling Device	Controlled Device
1	Frame Ground	Frame Ground
2	Receive A	Transmit A
3	Transmit B	Receive B
4	Transmit Common	Receive Common
5	Spare	Spare
6	Receive Common	Transmit Common
7	Receive B	Transmit B
8	Transmit A	Receive A
9	Frame Ground	Frame Ground

<External view>

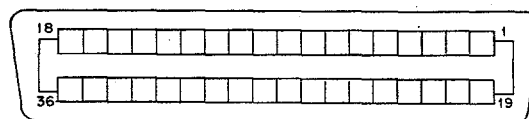


REMOTE-IN (9P)



REMOTE-OUT (9P)

# REMOTE-2 (36P)



REMOTE-2 (36P)

Pin No.	Description	Level
1	UNREG 5 V	TTL
2	L-FF COMMAND IN	TTL
3	L-FWD COMMAND IN	TTL
4	L-REW COMMAND IN	TTL
5	L-EJECT COMMAND IN	TTL
6	L-STOP COMMAND IN (*1)	TTL
7	L-PAUSE COMMAND IN (*1)	TTL
8	L-REC COMMAND IN	TTL
9	L-CUT IN COMMAND IN	TTL
10	L-EDT COMMAND IN	TTL
11	L-CUT OUT COMMAND IN	TTL
12	L-FF STATUS OUT	TTL
13	L-FWD STATUS OUT	TTL
14	L-REW STATUS OUT	TTL
15	L-STANDBY STATUS OUT	TTL
16	L-STOP STATUS OUT	TTL
17	L-PAUSE STATUS 1 IN/OUT	TTL
18	L-REC STATUS OUT	TTL
19	L-INSERT STATUS OUT	TTL
20	L-VIDEO INSERT IN	TTL
21	L-AUDIO-1 INSERT IN	TTL
22	L-AUDIO-2 INSERT IN	TTL
23	L-REVERSE COMMAND IN	TTL
24	SPEED A IN	TTL
25	SPEED B IN	TTL
26	L-CTL PULSE OUT (*2)	TTL
27	L-TACH OUT	TTL
28	L-CAPSTAN LOCK OUT	TTL
29	SYNCHRONIZE IN	3.0 V; 0 % -0.3 V; -10 to -15 % +6 V; +10 to +15 %

30	L-STILL TENSION IN (*3)	—
31	H-NORMAL FWD IN	TTL
32	L-PAUSE STATUS 2 OUT	TTL
33	L-SEARCH STATUS IN	TTL
34	NC (*2)	—
35	GND	—
36	GND	—

**NOTES:**

- \*1. Holding pins 6 and 7 low simultaneously places unit in the "STANDBY ON/OFF" mode.
- \*2. When connecting the BVBC-10, set S302 on the SY-61 board to ON.
- \*3. When connecting the BVR-510ACE, set System Setup Item 204 to "ENABLE" (refer to Section 1-7).

## 1-6. SELECT SWITCH AND SHORT PLUG SETTING

### 1-6-1. Select Switch Setting

Along with the select switches on the control panel and function control panel, there are system select switches on the circuit boards. These switches must be set according to operating condition.

#### DEC-42P Board

##### S500: VITC BLANKING Select Switch

The VITC signal inserted into a incoming video signal should be blanked before selecting the line into which a VITC signal is inserted according to Setup Items 601 and 602. Blanking is selected using this switch.

**SEL:** Blanks the incoming video signal line which corresponds to the VITC insertion line designated by Setup Items 601 and 602.

**ALL:** Blanks all V blanking signals.

When the set is shipped, this switch is set to the SEL position.

#### TBC-7D Board

##### S101: VISC ON/OFF Switch

When the set is shipped, this switch is set to the ON position.

##### S200: TEST Switch

When the set is shipped, this switch is set to the ON position.

(All switches are used for electrical alignment at the factory.)

#### TBC-12P Board

##### S500: Bit 1 DIGITAL COMB FILTER CHROMA NOISE CANCEL Switch (G-1)

**ON:** Turns the chroma digital comb filter off.

**OFF:** Turns the chroma digital comb filter on.

When the set is shipped, this switch is set to the OFF position.

##### Bit 2 LINE ADDER ON/OFF Switch

**ON:** Turns the line adder on during DT.

**OFF:** Turns the line adder off during DT.

When the set is shipped, this switch is set to the OFF position.

##### Bit 3 Undefined.

When the set is shipped, this switch is set to the OFF position.

##### Bit 4 VISC MUTE ON/OFF Switch

**ON:** Outputs a VISC signal to the VIDEO OUT connector.

**OFF:** Outputs no VISC signal to the VIDEO OUT connector.

When the set is shipped, this switch is set to the OFF position.

#### TBC-9P Board

S3: Bits 1 through 8 / S4: Bits 1 and 7

##### BLANKING POSITION Select Switch (D-1)

During blanking, the arbitrary location of lines 9 through 23 can be selected using S3 and S4.

DIP switch	Line	DIP switch	Line
S3 - Bit 1	9	S4 - Bit 1	17
S3 - Bit 2	10	S4 - Bit 2	18
S3 - Bit 3	11	S4 - Bit 3	19
S3 - Bit 4	12	S4 - Bit 4	20
S3 - Bit 5	13	S4 - Bit 5	21
S3 - Bit 6	14	S4 - Bit 6	22
S3 - Bit 7	15	S4 - Bit 7	23
S3 - Bit 8	16		

Turn on the bit of the switch corresponding to the blanking line.

When the set is shipped, this switch is set to the all ON position.

- S4: Bit 8 TBC SYNC DELAY ON/OFF Switch (C-1)  
For playback and EE pictures, the video signal is shifted by 16H relative to a sync signal (shifted 16H in the EE mode). The picture is thus shifted on the monitor.

To prevent the picture from being shifted, the sync signal of a playback picture is delayed by 16H relative to a reference input signal.

ON: Delayed by 16H.

OFF: Not delayed (in phase with reference sync signal).

When the set is shipped, this switch is set to the ON position.

#### EN-48P Board

- S1: COLOR/B&W Mode Select Switch (A-3)  
(Used for electrical alignment at the factory.)  
ON: B&W mode  
OFF: COLOR mode  
When the set is shipped, this switch is set to the OFF position.

- S2: ID BLANKING ON/OFF Switch (A-2)  
(Used for electrical alignment at the factory.)  
Selects whether a color framing ID pulse should be added to the component signal.  
ON: Adds a color framing ID pulse.  
OFF: Does not add a color framing ID pulse.  
When the set is shipped, this switch is set to the OFF position.

#### VO-18P Board

- S1: CHARACTER BACKGROUND COLOR Select Switch

W BACK: The background is white with black characters.

B BACK: The background is black with white characters.

When the set is shipped, this switch is set to the B BACK position

- S2: Y-MUTE ON/OFF Switch (A-4)

(Used for electrical alignment at the factory.)

ON: Mutes the Y signal of the composite signal output from the VIDEO OUT connector.

OFF: Outputs a normal composite signal from the VIDEO OUT connector.

When the set is shipped, this switch is set to the OFF position.

- S3: VIDEO OUTPUT SIGNAL Select Switch (A-3)

This switch selects the type of video signal output from the VIDEO OUTPUT 2 connector on the connector panel.

ON: Outputs a non-composite video signal.

OFF: Outputs a composite video signal.

When the set is shipped, this switch is set to the OFF position.

- S4: REGENE 1 Switch

This switch selects whether a VISC signal should be output from the DUB/COMPONENT 1 OUT connector.

ON: Output with a VISC signal.

OFF: Output without a VISC signal.

When the set is shipped, this switch is set to the ON position.

- S5: REGENE 2 Switch

This switch selects whether a VISC signal should be output from the COMPONENT 2 OUT connector.

ON: Output with a VISC signal.

OFF: Output without a VISC signal.

When the set is shipped, this switch is set to the OFF position.

## **SY-61 Board**

### **S101: CHARACTER ON/OFF Switch (E-12)**

ON: A character signal (time code and so on) is superimposed on the video signal which is output from the VIDEO OUT 3 connector and MONITOR connector.

OFF: No character signal is superimposed on the output video signal.

When the set is shipped, this switch is set to the ON position.

### **S102: REEL POSITION Switch (C-12)**

When a cassette tape is inserted, the cassette size is detected and the reel table is automatically moved to the position corresponding to the cassette tape.

This switch is used to move the reel table position without inserting a cassette tape (when the switch is pressed repeatedly, the mode alternates between L and S).

### **S103: SYSTEM SETUP MENU Switch (B-12)**

This switch is used to interface with an external unit and/or set the BVW-75P's initial setup status. When the switch is pressed, a menu is displayed.

### **S105: SYSTEM SETUP SET Switch (B-12)**

Press this switch after the displayed setup data on the menu is set. New data is then set.

### **S106: SYSTEM SETUP MENU Select Switch (A-11)**

ON: Enables setup menu-1/2 operation.

OFF: Enables setup menu-1 operation.

When the set is shipped, this switch is set to the OFF position.

### **S201: SYNCHRONIZE ON/OFF Switch (D-12)**

ON: Two VTRs are synchronized for editing with the BVW-75P as a controller.

OFF: Not synchronized.

When the set is shipped, this switch is set to the ON position.

### **S202: VTR CONTROL Switch (F-12)**

EXT: Set when the BVW-75P is controlled remotely using an optional operation panel (BVR-75A) and extension cable (10-pin).

INT: Set when the BVW-75P's operation panel is used.

When the set is shipped, this switch is set to the INT position.

### **S203 and S204: Undefined**

### **S206: SYSTEM RESET Switch (G-12)**

When this switch is pressed, the VTR is reset to the same state as when power is turned on.

### **S302: TAPE DIRECTION SIGNAL ON/OFF Switch (H-6)**

This switch selects whether a TAPE DIRECTION (L-REV) signal should be output to pin 34 of a REMOTE-2 (36-pin) connector.

ON: Outputs a signal.

OFF: Outputs no signal.

When the set is shipped, this switch is set to the OFF position.

## **SY-64P Board**

### **S1: VITC/AUTO/LTC Select Switch (H-1)**

This switch selects whether the time code or user bit on the counter display indicator should be displayed using an LTC or VITC.

VITC: Displayed using a VITC.

AUTO: Displayed using an LTC when the tape runs at more than 1/2 times normal speed and displayed using a VITC when it runs at less than 1/2 times normal speed.

Displayed using an LTC in the REC/EE mode.

LTC: Displayed using an LTC.

When the set is shipped, this switch is set to the LTC position.

S2: EXT/INT Select Switch (G-1)

EXT: Set when the the external time code generator connected to a time code input terminal is used.

INT: Set when a built-in time code generator is used.

When the set is shipped, this switch is set to the INT position.

S3: REGEN/PRESET Select Switch (F-1)

REGEN: A built-in time code generator is genlocked to the time code signal which is read using a time code reader.

PRESET: Can be preset using an operation panel or remote control pin (9-pin).

When the set is shipped, this switch is set to the PRESET position.

S4: REC RUN/FREE RUN Select Switch (E-1)

REC RUN: A time code generator is activated only in the REC mode.

FREE RUN: A time code generator is activated while the POWER switch is on, irrespective of the VTR mode setting.

When the set is shipped, this switch is set to the FREE RUN position.

Note: This switch is valid only when S2 is set to INT, and S3 to PRESET. For settings other than the above, the switch is set to FREE RUN.

S6: VITC ON/OFF Switch (C-1)

ON: The VITC time code generated using a built-in time code generator is recorded.

OFF: The VITC time code contained in an input video signal is recorded directly.

When the set is shipped, this switch is set to the ON position.

S7: ID PRESET Select Switch (B-1)

ON: Turned on when an ID signal is preset to the user bit and data is recorded using the user bit.

OFF: Normal setting

When the set is shipped, this switch is set to the OFF position.

SV-82 Board

S101: Bit 1 TENSION SERVO ON/OFF Switch (B-1)  
(Used for electrical alignment at the factory.)

ON: The tension servo feedback is not locked. Servo trouble detection is stopped.

OFF: The tension servo feedback is locked. Servo trouble detection is done.

When the set is shipped, this switch is set to the OFF position.

Bit 2 Forcible TRACKING Control Operation ON/OFF Switch

(Used for electrical alignment at the factory.)

ON: The TRACKING control is activated during DT.

OFF: The TRACKING control is not activated during DT.

When the set is shipped, this switch is set to the OFF position.

Bit 3 Forcible REC Mode Switch

(Used for mechanical alignment.)

This switch is used to play back a tape with the audio signal recorded on the CTL track (CTL height adjustment).

ON: The VTR enters the forcible REC mode to make the tape run at a fixed speed.

OFF: Normal setting

When the set is shipped, this switch is set to the OFF position.

Bit 4 PHI-SQUARE SERVO ON/OFF Switch

ON: The phi-square servo is not activated.

OFF: The phi-square servo is activated.

When the set is shipped, this switch is set to the ON position.



#### SV-83 Board

##### S1: H SHIFT MUTE Switch (A-3)

This switch is used to cancel the H lock during adjustment.

ON: The H lock is canceled.

OFF: The H lock is activated.

When the set is shipped, this switch is set to the OFF position.

#### DT-13 Board

##### S201: Bit 1 WOBBLING ON/OFF Switch (F-1)

(Used for electrical alignment.)

ON: Inhibits DT head wobbling.

OFF: Enables normal DT head wobbling.

When the set is shipped, this switch is set to the OFF position.

##### Bit 2 DYNAMIC TRACKING ON/OFF Switch

(Used for electrical alignment.)

ON: Inhibits dynamic tracking.

OFF: Enables normal dynamic tracking.

When the set is shipped, this switch is set to the OFF position.

##### S202: HYSTERESIS CANCEL START Switch (E-1)

Pressing this switch starts demagnetizing.

#### DT-14P Board

##### S1: TRACKING SERVO ON/OFF Switch at Y/C delay (A-1)

ON: Inhibits tracking servo.

OFF: Enables normal tracking servo.

When the set is shipped, this switch is set to the OFF position.

#### AU-76P Board

##### S101, S102, S201, S202 (D-8, D-3, F-8, E-8)

Used for audio adjustment.

##### S301: Forcible CONFIDENTIAL HEAD Playback Switch (B-1)

ON: Forcibly plays back using a CONFIDENTIAL head in the normal PB mode.

OFF: Plays back using an RP head in the normal PB mode.

(Plays back using a CONFIDENTIAL head in the REC mode.)

When the set is shipped, this switch is set to the OFF position.

#### DP-73 Board

##### S1: SCALE VU/dB Select Switch

VU: Displays the audio level in VU.

dB: Displays the peak-to-peak audio level.

When the set is shipped, this switch is set to the VU position.

##### S2: TEST Switch

(Used for electrical alignment.)

ON: All indicators of the audio level meter light.

OFF: Normal display

When the set is shipped, this switch is set to the OFF position.

## Setting the Audio Preset Level

### Setting the REC PRESET level

To set the REC PRESET level relative to the factory setting (VU indication at +4dBm input, 0VU; peak indication, -9dB), use variable resistors on the BF-28 board according to the electrical alignment. The preset level can be set from no signal to +6dB relative to the factory setting level.

(CH-1/RV101, CH-2/RV201, CH-3/RV301,  
CH-4/RV401)

### Setting the PB PRESET level

To set the PB preset level relative to the factory setting (+4dBm), use variable resistors on the BF-28 board according to the electrical alignment. The preset level can be set from -6dB to +6dB relative to the factory setting level.

(CH-1/RV102, CH-2/RV202, CH-3/RV302,  
CH-4/RV402)

## 1-6-2. Short Plug Setting

There are short plugs on the printed circuit boards. These plugs must be set according to operating condition.

### DM-56P Board

SP101 and SP102: Y RF AGC ON/OFF  
(Used for electrical alignment.)

When the set is shipped, SP101 is set to the OPEN position, and SP102 to the SHORT position.

SP301: Y Signal ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP301 is set to the SHORT position.

SP501 and SP502: C RF AGC ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP501 is set to the OPEN position, and SP502 to the SHORT position.

SP701: C Signal ON/OFF

(Used for electrical alignment.)

When the set is shipped, SP701 is set to the SHORT position.

### RP-29P(Y) Board

SP1 and SP2: REC/PB System Adjustment

(Used for electrical alignment.)

When the set is shipped, SP1 and SP2 are set to the SHORT position.

### RP-29P(C) Board

SP101 and SP102: REC/PB System Adjustment

(Used for electrical alignment.)

When the set is shipped, SP1 and SP2 are set to the SHORT position.

## 1-7. SYSTEM CONTROL SETUP

Various select switches are provided on the control panel, subcontrol panel, and printed circuit board in the unit (refer to Section 1-6 "Select Switch and Short Plug Setting").

For the system control items described below, the initial setting at the factory can be set as in Section 1-6 Select Switch and Short Plug Setting.

### ITEM LIST FOR INITIAL SETUP MENU

#### Setup Menu - 1

#### ITEM-000 SERIES: OPERATIONAL KEY PARAMETER

- 001: PREROLL TIME
- 002: CHARACTER H-POSITION
- 003: CHARACTER V-POSITION
- 004: CHARACTER V-SIZE
- 005: DISPLAY INFORMATION SELECT
- 006: LOCAL FUNCTION ENABLE
- 007: TAPE TIMER DISPLAY
- 008: MONITORING SELECTION FOR VTR-TO-VTR EDIT

#### Setup Menu - 2

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ITEM-900 SERIES: ADJUSTMENT USE ONLY

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- 902: EMERGENCY TAPE PROTECTION
- 907: CONFI SELECT IN PB MODE

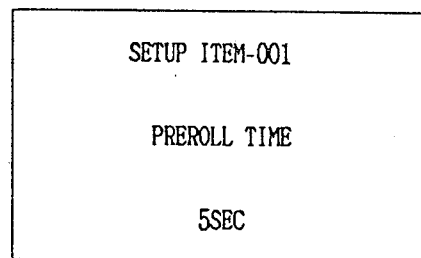
### 1-7-1. Setup

- . The system control is set up according to the following procedure.
  - . The setup appears on the function control panel's time counter display and monitor television.  
(To display the setup on the monitor, connect the monitor television to the VIDEO OUT-3 connector on the connector panel and turn on the CHARACTER ON/OFF switch on the SY-61 board.)
- (1) Turn on the unit POWER switch.
  - (2) Press the SYSTEM SETUP MENU switch on the SY-61 board; the SETUP ITEM-001 and PREROLL TIME are displayed.

Time counter display on the function control panel

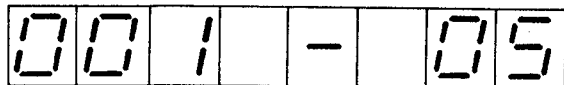


CHARACTER display



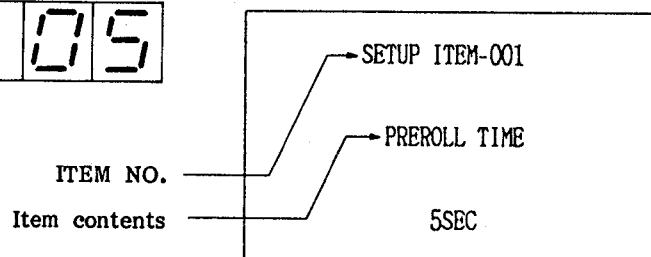
- (3) After the JOG mode is entered, turn the search dial and select the setup item to be set (the time counter display ITEM NO. blinks). Turn the search dial clockwise to increase the item number and counterclockwise to decrease it.

Time counter display on the function control panel



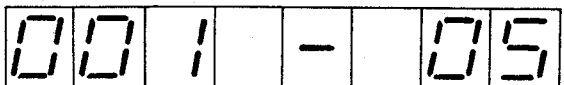
ITEM NO. blinks.

CHARACTER display



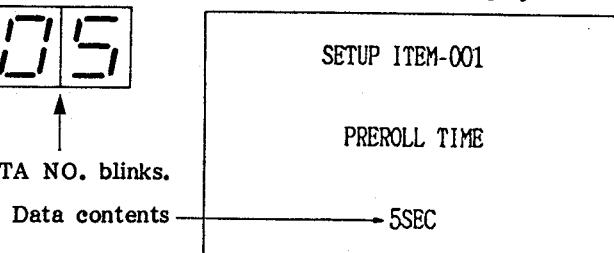
- (4) Turn the search dial while pressing the search button and set the data (the time counter display DATA NO. blinks). Turn the search dial clockwise to increase the data number and counterclockwise to decrease it.

Time counter display on the function control panel



DATA NO. blinks.

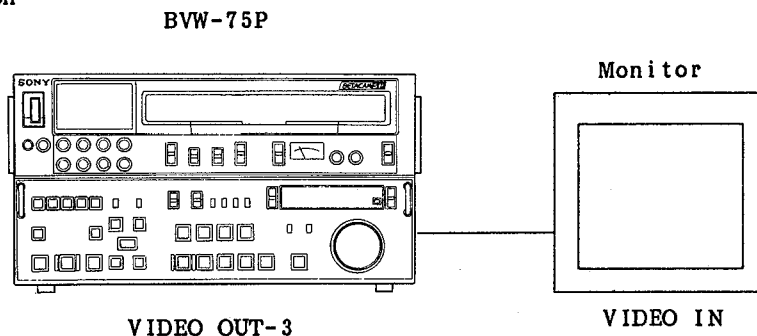
CHARACTER display



- (5) To set other setup items, repeat Steps 3 and 4.
- (6) Press the SYSTEM SETUP switch on the SY-61 board after the data has been set. Setup data is then written into a nonvolatile memory (NVRAM). After that, the setting data remains unchanged even if the POWER switch is turned off.
- (7) To turn all data to the factory settings, press the time counter display RESET button after pressing the SYSTEM SETUP MENU switch.

Notes: For factory settings only the SETUP MENU-1 can be set as described above. To set the SETUP MENU-2, turn on switch S106 on the SY-61 board and set it in the same manner as described above.

#### Connection



1-7-2. Setup Item/Data

Setup Item		Setup Data		Item and Data Description
ITEM NO. Time Counter	Item Character Display	DATA NO. Time Counter	DATA Character Display	
ITEM-000 SERIES; OPERATIONAL KEY PARAMETER				
001	PREROLL TIME	00	0 SEC	Preroll time setting. The preroll time can be set from 0 to 15 seconds. When the unit is used for editing, the preroll time setting should be three seconds or more.   

003	CHARACTER V-POSITION	00	00/16	<p>The time data and status monitor output from the VIDEO OUT-3 connector are positioned in the vertical direction.</p> <p>When the DATA NO. is set to 00, the character is displayed at the top of the screen. When it is set to 15, the character is displayed at the bottom of the screen.</p> <p>Factory setting: DATA NO.12 (12/16)</p>
		01	01/16	
		02	02/16	
		03	03/16	
		04	04/16	
		05	05/16	
		06	06/16	
		07	07/16	
		08	08/16	
		09	09/16	
		10	10/16	
		11	11/16	
		12	12/16	
		13	13/16	
		14	14/16	
		15	15/16	
004	CHARACTER V-SIZE	0	SMALL LARGE	<p>The vertical size of the time data and status monitor output from the VIDEO OUT-3 connector is set.</p> <p>DATA NO.0: SMALL DATA NO.1: LARGE</p> <p>Factory setting: DATA NO.0 (SMALL)</p>
		1		
005	DISPLAY INFORMATION SELECT	0	TIME DATA & STATUS TIME DATA TIME & STATUS & MODE REPLAY INDICATE	<p>When the CHARACTER ON/OFF switch is turned on, the data output from the VIDEO OUT-3 connector is selected.</p> <p>DATA NO.0: Displays the time data and status monitor. DATA NO.1: Displays the time data. DATA NO.2: Displays the time data, status monitor, and VTR mode. DATA NO.3: The letter "R" is displayed during DT play mode.</p> <p>Note: The VTR mode indicates whether the VTR is in the SP mode (Metal tape) or STD mode (Oxide tape). Usually, the SP mode is entered during cassette-out operation. When DATA NO.2 is selected, the previous cassette's mode is held.</p> <p>Factory setting: DATA NO.0 (TIME DATA &amp; STATUS)</p>
		1		
		2		
		3		



006	LOCAL FUNCTION ENABLE	0 1 2	ALL DISABLE STOP & EJECT ALL ENABLE	<p>When the VTR is set to the REMOTE mode, the switches/buttons on the function control panel are selected.</p> <p>DATA NO.0: No switches/buttons are activated.</p> <p>DATA NO.1: Only STOP and EJECT buttons are activated.</p> <p>DATA NO.2: All switches/buttons other than RECORDER and PLAYER buttons are activated.</p> <p>Factory setting: DATA NO.0 (ALL DISABLE)</p>
007	TAPE TIMER DISPLAY	0 1	+/-12H 24H	<p>Selects whether the CTL counter is displayed by <math>\pm 12H</math> or 24H.</p> <p>DATA NO.0: Displayed by <math>\pm 12H</math>.</p> <p>DATA NO.1: Displayed by 24H</p> <p>Factory setting: DATA NO.0 (+/-12H)</p>
008	MONITORING SELECTION FOR VTR TO VTR EDIT	0 1	RECORDER ONLY AUTO SWITCH	<p>When only one monitor television is connected to the recorder during tape editing with two VTRs, selects whether the player PB video and audio signals should be output to the monitor television by pressing the PLAYER button on the recorder's function control panel, irrespective of its PB.PB/EE switch setting.</p> <p>DATA NO.0: The recorder is not set to the EE mode, and the player's PB signal is selected using the recorder's PB.PB/EE switch.</p> <p>DATA NO.1: The recorder is set to the EE mode, and the player PB video and audio signals are output to the monitor television.</p> <p>Factory setting: DATA NO.0 (RECORDER ONLY)</p>



ITEM-100 SERIES; OPERATIONAL PARAMETER				
101	SELECTION FOR SEARCH DIAL ENABLE	0 1	DIAL DIRECT VIA SEARCH BUTTON	<p>Sets entering the SEARCH mode.</p> <p>DATA NO.0: When the SEARCH dial is turned, the VTR enters the SEARCH mode from any mode other than REC/EDIT.</p> <p>DATA NO.1: When the SEARCH button is pressed, the VTR enters the SEARCH mode.</p> <p>Factory setting: DATA NO.0 (DIAL DIRECT)</p>
102	MAXIMUM TAPE SPEED	0 1 2	X 24 X 42 (SHUTTLE X 24) X 24	<p>Sets the maximum tape speed in the SEARCH mode.</p> <p>DATA NO.0: The maximum tape speed which is in the F.FWD/REW mode and which can be set using a dial in the SHUTTLE mode is 42 times normal speed.</p> <p>DATA NO.1: The maximum tape speed in the F.FWD/REW mode is 42 times normal speed. The maximum tape speed which can be set using a dial in the SHUTTLE mode is 24 times normal speed.</p> <p>DATA NO.2: The maximum tape speed which is in the F.FWD/REW mode and which can be set using a dial in the SHUTTLE mode is 42 times normal speed.</p> <p>Factory setting: DATA NO.1 (X 42 (SHUTTLE X 24))</p>

103	AUDIO SELECTED LINE OUT	0 1  2	MANUAL AUTO AFM/LNG SELECT AUTO LNG SELECT	<p>Selects the signal output to AUDIO SELECTED OUTPUT.</p> <p>DATA NO.0: The selected signal is output using the AUDIO MONITOR SELECT switch.</p> <p>DATA NO.1: An AFM (CH-3/CH-4) signal is output in stereo in the metal particle tape PB mode, and an LNG (CH-1/CH2) signal in the oxide tape PB mode.</p> <p>DATA NO.2: The selected signal is output using the AUDIO MONITOR SELECT switch. However, when the AFM signal is selected in the variable-speed play mode, the LNG signal is output automatically.</p> <p>NOTE: When this item is set to AUTO, the level of the signal output from the SELECTED output connectors cannot be adjusted by any volumes.</p> <p>Factory setting: DATA NO.0 (MANUAL)</p>
104	AUDIO MUTING TIME	00 01 02 03 04 05 06 07 08 09 10	OFF 0.1 SEC 0.2 SEC 0.3 SEC 0.4 SEC 0.5 SEC 0.6 SEC 0.7 SEC 0.8 SEC 0.9 SEC 1.0 SEC	<p>When the VTR enters the PLAY mode from the STOP or STILL mode, sets the muting time of an audio signal. The muting time of the audio signal can be set from 0 (OFF) (not muted) to 1.0 second.</p> <p>Factory setting: DATA NO.00 (OFF)</p>
105	REF VIDEO MISSING ALARM	0 1	OFF ON	<p>When no REF video signal is supplied, selects whether it should be displayed as an alarm.</p> <p>DATA NO.0: No alarm display DATA NO.1: The STOP button lamp flashes as alarm display.</p> <p>Factory setting: DATA NO.0 (OFF)</p>

106	CAPSTAN LOCK	0 1 2 3 4	SWITCH SELECT 2F 2F/4F 4F 8F	<p>Selects the CAPSTAN LOCK mode.</p> <p>DATA NO.0: Selected using capstan lock switch on the sub control panel.</p> <p>DATA NO.1: Capstan lock mode is 2F in spite of switch position.</p> <p>DATA NO.2: Capstan lock mode is 2F/4F in spite of switch position.</p> <p>DATA NO.3: Capstan lock mode is 4F in spite of switch position.</p> <p>DATA NO.4: Capstan lock mode is 8F in spite of switch position.</p> <p>Factory setting: DATA NO.0 (SWITCH SELECT)</p>
107	REC INHIBIT LAMP FLASHING	0 1	OFF ON	<p>Selects whether or not the lamp flashes.</p> <p>Selects whether or not the REC INHIBIT lamp flashes when the REC INHIBIT switch on the subcontrol panel is set to OFF and the record proof tab is broken.</p> <p>DATA NO.0: The lamp does not flash.</p> <p>DATA NO.1: The lamp flashes.</p> <p>Factory setting: DATA NO.0 (OFF)</p>
108	AUTO EE SELECT	0 1	STOP/F.FWD/ REW STOP	<p>When the PB.PB/EE switch on the control panel is set to the PB/EE mode, selects the VTR mode which automatically enters the EE mode.</p> <p>DATA NO.0: The video and audio signals in the STOP/EJECT/F.FWD/REW mode enter the EE mode.</p> <p>DATA NO.1: Video and audio signals enter the EE mode in only the STOP/EJECT mode.</p> <p>Factory setting: DATA NO.0 (STOP/F.FWD/REW)</p>

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109	FORCED EE WHEN CASSETTE OUT	0 1	ON OFF	<p>Selects whether the PB/EE mode is controlled using a PB.PB/EE switch on the control panel during threading/unthreading and cassette OUT.</p> <p>DATA NO.0: The PB/EE mode cannot be controlled.</p> <p>DATA NO.1: The PB/EE mode can be controlled.</p> <p>Factory setting: DATA NO.0 (ON)</p>
111	PROGRAM PLAY	0 1	DISABLE ENABLE	<p>Selects the DISABLE/ENABLE program play mode.</p> <p>DATA NO.0: Program play mode inoperational.</p> <p>DATA NO.1: Program Play mode operational.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>

ITEM-200 SERIES; REMOTE INTERFACE PARAMETER				
201	PARA RUN	0 1	DISABLE ENABLE	<p>Selects whether two (or more) VTRs should be operated in parallel operation.</p> <p>DATA NO.0: No parallel operation DATA NO.1: When the RECORDER and PLAYER buttons on the function control panel are pressed, the two lamps light. Operation can then be parallel.</p> <p>Note: To operate VTRs in parallel operation, set Item 201 of all VTRs to DATA NO.1.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
202	CF FLAG REPLAY (625/50 ONLY)	0 1	8F 4F or 8F	<p>Selects to which mode the COLOR FRAME LOCK STATUS fed to the remote controller is set.</p> <p>DATA NO.0: 8F(Indicates that data is locked at 8 fields.) DATA NO.1: 4F or 8F (Indicates that data is locked at 4 fields or 8 fields.)</p> <p>Factory setting: DATA NO.0 (8F)</p>
203	STANDBY COMMAND FOR REMOTE-2 I/F	0 1	STOP & PAUSE STOP OR PAUSE	<p>Selects the STANDBY ON/OFF mode using the remote control unit which is connected to the REMOTE-2 connector (36-pin).</p> <p>DATA NO.0: When the STOP and PAUSE buttons are pressed simultaneously, the STANDBY mode is turned on or off. DATA NO.1: When the STOP button is pressed, the STANDBY ON mode is entered. When the PAUSE button is pressed in the STOP mode, the STANDBY mode is turned on or off.</p> <p>Factory setting: DATA NO.0 (STOP &amp; PAUSE)</p>



204	STILL TENSION CMD IN REMOTE-2 I/F	0 1	DISABLE ENABLE	<p>When a STILL TENSION command is output from the remote control unit connected to the 36-pin REMOTE-2 connector, selects whether the VTR accepts the command.</p> <p>DATA NO.0: No command is accepted. DATA NO.1: A command is accepted.</p> <p>Note: Select DATA NO.0 when connected to BVE-3000 and DATA NO.1 when connected to BVR-510ACE.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
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ITEM-300 SERIES; EDITING PARAMETER				
301	VAR SPEED RANGE FOR SYNCHRONIZA- TION	0 1	-1 ~ +2 -1.15 ~ +2.3	<p>Sets the speed range when the variable speed is controlled using the remote control unit connected to the REMOTE-1 connector (9-pin).</p> <p>DATA NO.0: -1 to +2 DATA NO.1: -1.15 to +2.3</p> <p>Note: Select DATA NO.1 when connect- ed to the BVE-900 editing controller for DT editing. When DATA NO.1 is selected or the DT playback is done at -1 to +2 times normal speed or more, the picture may be missed at the bottom of the screen (this is not a defect).</p> <p>Factory setting: DATA NO.0 (-1 ~ +2)</p>
302	CAPSTAN RELOCKING DIRECTION	0 1	DECELERATION ACCELERATION	<p>When the CAPSTAN LOCK switch on the subcontrol panel is set to 4F, selects whether the capstan servo is locked in the acceleration or deceleration mode.</p> <p>DATA NO.0: Locked in the decelera- tion mode. DATA NO.1: Locked in the accelera- tion mode.</p> <p>Note: Select DATA NO.0 when connect- ed to BVU-800P series, BVU-40P and BVW-10P for editing and DATA No.1 when connected to a 1-inch VTR for editing.</p> <p>Factory setting: DATA NO.1 (ACCELERATION)</p>
303	EDIT DELAY	0 1	6 FIELDS 4 FIELDS	<p>Receives a recording command from the remote control unit during tape editing selects and the number of field delayed until the VTR starts recording.</p> <p>DATA NO.0: Starts recording six fields after the command is received. DATA NO.1: Starts recording four fields after the command is received.</p> <p>Note: Select DATA NO.1 when connect- ed to BVE-500ACE.</p> <p>Factory setting: DATA NO.0 (6 FIELD)</p>



304	EDIT FIELD SELECT	0 1 2	1F 2F 1F/2F	<p>Selects the start timing during tape editing.</p> <p>DATA NO.0: Editing starts at field 1 and ends at field 2.</p> <p>DATA NO.1: Editing starts at field 2 and ends at field 1.</p> <p>DATA NO.2: Editing starts and ends at any field.</p> <p>Factory setting: DATA NO.0 (1F)</p>
305	SYNC GRADE	0 1	ACCURATE ROUGH	<p>Selects the editing accuracy when switch S201 (SYNCHRONIZE SW) on the SY-61 board is set to ON and editing is done in the sync mode.</p> <p>DATA NO.0: Editing is done with editing accuracy <math>\pm 0</math> frame.</p> <p>DATA NO.1: Editing is done with editing accuracy <math>\pm 1</math> frame.</p> <p>Factory setting: DATA NO.0 (ACCURATE)</p>
306	DMC INITIAL SPEED	00 01 02 03 04 05 06 07 08 09 10 11 12 13	MANUAL PLAY STILL +0.03 +0.1 +0.2 +0.5 +1 +2 -0.03 -0.1 -0.2 -0.5 -1	<p>Selects the initial speed which is set automatically in selecting DMC (Dynamic Motion Control).</p> <p>DATA NO.00: Sets the initial speed by the rotation angle of the search dial.</p> <p>DATA NO.01: The initial speed is a speed in the PLAY mode.</p> <p>DATA NO.02: The tape stops (STILL MODE).</p> <p>DATA NO.03 to 13: The initial speed is a speed in the search mode.</p> <p>Factory setting: DATA NO.00 (MANUAL)</p>

307	AUTO- DELETION FOR INCONSISTENT DATA	0 1 2	MANUAL NEG AND EXCESS NEG	<p>Selects the operation when an erroneous edit point is set.</p> <p>DATA NO.0: The DELETE lamp blinks and the ALARM display appears. Delete the undesired edit point or set the edit point correctly.</p> <p>DATA NO.1: When the edit point is set as IN <math>\geq</math> OUT or AUDIO IN <math>\geq</math> AUDIO OUT or the number of edit points is excessive, the previously entered edit point is deleted automatically.</p> <p>DATA NO.2: When the edit point is set as IN <math>\geq</math> OUT or AUDIO IN <math>\geq</math> AUDIO OUT, the previously entered edit point is deleted automatically. When the number of edit points is excessive, the DELETE lamp blinks and the ALARM display appears.</p> <p>Notes: . When the edit point's key and the DELETE key are pressed simultaneously, data at the edit point is deleted.  . When an erroneous edit point is set (the DELETE lamp blinks), editing (PREVIEW or AUTO EDIT) is not executed.</p> <p>Factory setting: DATA NO.0 (MANUAL)</p>
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ITEM-400 SERIES; PREROLL PARAMETER				
401	FUNCTION MODE AFTER CUE-UP	0 1	STOP STILL	<p>Selects the mode after CUE-UP is completed.</p> <p>DATA NO.0: Enters the STOP mode. DATA NO.1: Enters the STILL mode.</p> <p>Factory setting: DATA NO.0 (STOP)</p>
402	TIME REFERENCE FOR PREROLL	0 1	CTL TC	<p>When a tape with the time code signal containing a discontinuous point is used and the discontinuous point is prerolled, selects whether the time code signal preceding the point is advanced and prerolled using a CTL signal.</p> <p>DATA NO.0: Advanced using a CTL signal. DATA NO.1: Not advanced using a CTL signal.</p> <p>Factory setting: DATA NO.0 (CTL)</p>
403	AUTOMATIC PREROLL REFERENCE ENTRY	0 1	DISABLE ENABLE	<p>Selects whether the IN point is entered by pressing only the PREROLL button when it is not entered during preroll operation.</p> <p>DATA NO.0: IN point is not entered automatically. DATA NO.1: IN point is entered automatically.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>

ITEM-500 SERIES; TAPE PROTECTION PARAMETER				
501	STILL TIMER	00	0.5 SEC	<p>The unit automatically enters the tape PROTECTION mode after it has been in the tape STOP (or STILL) mode for a fixed time to protect the video head and tape.</p> <p>This item sets the transition time of the tape STOP to tape PROTECTION mode.</p> <p>The time can be set from 0.5 seconds to 30 minutes.</p> <p>Factory setting: DATA NO.14 (8 MIN)</p>
		01	5 SEC	
		02	10 SEC	
		03	20 SEC	
		04	30 SEC	
		05	40 SEC	
		06	50 SEC	
		07	1 MIN	
		08	2 MIN	
		09	3 MIN	
		10	4 MIN	
		11	5 MIN	
		12	6 MIN	
		13	7 MIN	
		14	8 MIN	
		15	30 MIN	
502	TAPE PROTECTION MODE FROM SEARCH	0	STEP FWD	<p>When the time in the STILL mode set using Item 501 passes, the unit enters the tape PROTECTION mode. This item selects the tape PROTECTION mode setting.</p> <p>DATA NO.0: When the time designated by Item 501 passes, the tape is sent repeatedly for 2 seconds at 1/30 times normal speed in the forward direction.</p> <p>DATA NO.1: When the designated time passes, the unit enters the STANDBY OFF mode.</p> <p>DATA No.2: When the designated time passes, the unit enters the TENSION RELEASE mode.</p> <p>Factory setting: DATA NO.0 (STEP FWD)</p>
		1	STANDBY OFF	
		2	TENSION RELEASE	
503	TAPE PROTECTION MODE FROM STOP	0	STANDBY OFF	<p>When the time in the STOP mode set using Item 501 passes, the unit enters the tape PROTECTION mode. This item selects the tape PROTECTION mode setting.</p> <p>DATA NO.0: When the designated time passes, the unit enters the STANDBY OFF mode.</p> <p>DATA NO.1: When the designated time passes, the unit enters the TENSION RELEASE mode.</p> <p>Factory setting: DATA NO.0 (STANDBY OFF)</p>
		1	TENSION RELEASE	
504	DRUM ROTATION IN STANDBY OFF	0	OFF	<p>Turns the drum motor ON or OFF in the STANDBY OFF mode.</p> <p>DATA NO.0: The drum rotation stops.</p> <p>DATA NO.1: The drum is rotated.</p> <p>Factory setting: DATA NO.0 (OFF)</p>
		1	ON	

ITEM-600 SERIES; TIME CODE GENERATOR PARAMETER

601	VITC POSITION SEL-1	9 10 11 12 13 14 15 16 17 18 19 20 21 22	9,322 LINE 10,323 LINE 11,324 LINE 12,325 LINE 13,326 LINE 14,327 LINE 15,328 LINE 16,329 LINE 17,330 LINE 18,331 LINE 19,332 LINE 20,333 LINE 21,334 LINE 22,335 LINE	<p>Selects into what line the VITC signal is inserted. The VITC signal can be inserted in lines 9,322 through 22,335.</p> <p>Note: Before the VITC signal is inserted into a incoming video signal, blank the insertion line. The two modes for blanking can be selected using S500 on the DEC-42P board. SEL: Blanks the incoming video signal line which corresponds to the VITC insertion line designated by this set. ALL: Blanks all V blanking signals. Factory setting: SEL</p> <p>Factory setting: DATA NO.19 (19,332 LINE)</p>
602	VITC POSITION SEL-2	9 10 11 12 13 14 15 16 17 18 20 21 22	9,322 LINE 10,323 LINE 11,324 LINE 12,325 LINE 13,326 LINE 14,327 LINE 15,328 LINE 16,329 LINE 17,330 LINE 18,331 LINE 20,333 LINE 21,334 LINE 22,335 LINE	<p>Selects into what line the VITC signal is inserted. The VITC signal can be inserted in lines 9,322 through 22,335.</p> <p>Note: In Items 601 and 602, the VITC signal can be inserted into two positions. Before the VITC signal is inserted into a incoming video signal, blank the insertion line. The two modes for blanking can be selected using S500 on the DEC-42P board. SEL: Blanks the incoming video signal line which corresponds to the VITC insertion line designated by this set. ALL: Blanks all V blanking signals. Factory setting: SEL</p> <p>The VITC signal can be inserted into two positions by Items 601 and 602.</p> <p>Factory setting: DATA NO.21 (21,334 LINE)</p>

603	ID CODE PRESET	0 1	DISABLE ENABLE	<p>When the ID code is set, selects DATA NO.1 (ENABLE).</p> <p>DATA NO.0: The ID code is not set. DATA NO.1: The ID code set mode is entered.</p> <p>Note: To set the ID code, select the DATA NO.1 (ENABLE) in ITEM 603 and light up the HOLD lamp on the function control panel. By blinking time counter display urge ID code to set. Take a figure up or down places using SHIFT button and select the figure using ADVANCE button. Press the PRESET button after the ID code to set. This item is automatically disabled after setting ID code.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
604	TCG REFERENCE	0 1	AUTO EXT	<p>Selects whether the reference signal for a time code generator should be extracted from the input video signal or the reference video signal.</p> <p>DATA NO.0: Signal is changed automatically under the same condition as servo reference. DATA NO.1: Extracted from the reference video signal.</p> <p>Factory setting: DATA NO.0 (AUTO)</p>
605	TCG REGEN MODE	0 1 2	TC & UB TC UB	<p>Selects the signal to be regenerated when the time code generator is in the REGEN mode.</p> <p>DATA NO.0: Both time code and user bit signals are regenerated. DATA NO.1: Only a time code signal is regenerated. DATA NO.2: Only a user bit signal is regenerated.</p> <p>Factory setting: DATA NO.0 (TC &amp; UB)</p>
606	TC OUTPUT SIGNAL IN REGEN MODE	0 1	OFF TAPE REGEN	<p>Selects the signal output from the TIME CODE OUT connector in the internal REGEN mode.</p> <p>DATA NO.0: The playback time code signal is not regenerated and output. DATA NO.1: The playback time code signal is regenerated and output only when the servo is locked in the PLAY mode.</p> <p>Factory setting: DATA NO.0 (OFF TAPE)</p>

607	U-BIT BINARY GROUP FLAG	00 01 10 11	NOT SPECIFIED ISO CHARACTER UNASSIGNED-1 UNASSIGNED-2	<p>Sets the user bit status of the time code signal which is generated using a time code generator.</p> <p>DATA NO.00: Character setting is not specified.</p> <p>DATA NO.01: 8-bit character setting based on IS0646 and IS02022.</p> <p>DATA NO.10: Undefined.</p> <p>DATA NO.11: Undefined.</p> <p>Factory setting: DATA NO.00 (NOT SPECIFIED)</p>
608	PHASE CORRECTION	0 1	OFF ON	<p>Selects whether the phase of the LTC signal which is generated using a time code generator should be corrected and controlled.</p> <p>DATA NO.0: The phase is not corrected and controlled.</p> <p>DATA NO.1: The phase is corrected and controlled.</p> <p>Factory setting: DATA NO.0 (OFF)</p>
609	TCG CF FLAG	0 1 2	OFF ON AUTO	<p>Selects whether the blank bit CF flag of time code data should be turned on or off.</p> <p>DATA NO.0: The CF flag is turned off.</p> <p>DATA NO.1: The CF flag is turned on.</p> <p>DATA NO.2: The CF flag is turned on or off according to the relation between the recorded video signal and the time code's color framing pulse.</p> <p>Note: In the AUTO mode, the CF flag is controlled as described below according to the time code generator mode.</p> <p>INT *PRESET mode: The time code is generated when a CF flag is locked to the video signal. The CF flag is then turned on.</p> <p>INT *REGEN mode: When the capstan lock switch on the subcontrol panel is set to 8F, the CF flag is turned on. For setting other than the above, the CF flag is turned off.</p> <p>Factory setting: DATA NO.0 (OFF)</p>

610	REGEN AUTO MODE	0	ASSEM & INSERT ASSEM MANUAL	<p>Selects whether a time code is regenerated automatically in the MACHINE TO MACHINE EDIT mode.</p> <p>DATA NO.0: When this set is used as a recorder in the MACHINE TO MACHINE EDIT mode, the TCG regenerates according to the time code on tape during ASSEMBLE and INSERT editing, irrespective of REGEN/PRESET switch setting.</p> <p>DATA No.1: When this set is used as a recorder in the MACHINE TO MACHINE EDIT mode, the TCG regenerates according to the time code on tape during ASSEMBLE editing, irrespective of REGEN/PRESET switch setting.</p> <p>DATA NO.2: The time code generator is activated according to S2(INT/EXT) and S3(REGEN/PRESET) on the SY-64P board irrespective of the BVW-75P's mode setting.</p> <p>Factory setting: DATA No. 0 (ASSEM &amp; INSERT)</p>
		1		
		2		

ITEM-800 SERIES; MISCELLANEOUS PARAMETER				
801	BVE-3000 OPERATION	0 1	OFF ON	<p>Item 801 should be set to ON when interfacing with BVE-3000.</p> <p>Factory setting: DATA No.0 (OFF)</p>



ITEM-900 SERIES; ADJUSTMENT USE ONLY

The items below are not displayed on the normal menu to avoid the erroneous operation. To display these items, turn the SEARCH dial while pressing the PLAY button. The three items are used exclusively for adjustment. After adjustment is completed, the switches should be returned to the factory setting position.

901	AUDIO NR IN SP MODE	0 1	ON SWITCH SELECT	<p>This setting is used exclusively for audio adjustment. After adjustment is completed, be sure to return the switch to the factory setting position. The Dolby NR control is selected when a metal tape is used for recording and playback.</p> <p>DATA NO. 0: Turned on at all times when the metal tape is used.</p> <p>DATA NO. 1: Turned on or off using a Dolby NR switch on the subcontrol panel.</p> <p>Note: When an oxide tape is used, set using an Dolby NR switch on the subcontrol panel irrespective of this setting.</p> <p>Factory setting: DATA NO.0 (ON)</p>
902	EMERGENCY TAPE PROTECTION	0 1	ENABLE DISABLE	<p>This setting is used exclusively for servo and mechanism adjustments. After adjustment is completed, be sure to return the switch to the factory setting position. When the VTR detects an error in the tape transport system, selects whether tape protection is done or not.</p> <p>DATA NO. 0: Tape protection is done.</p> <p>DATA NO. 1: Tape protection is not done.</p> <p>Note: When the data No. is 1, "-" (minus) is displayed on the keyboard panel's time counter.</p> <p>Factory setting: DATA NO.0 (ENABLE)</p>

907	CONFI SELECT IN PB MODE	0 1	DISABLE ENABLE	<p>This setting is used exclusively for confi head adjustment of the BVW-70P. After adjustment is completed, be sure to return the switch to the factory setting position. The playback video head is selected in the PB mode.</p> <p>DATA NO. 0: Enters the R/P HEAD PB mode in the PB mode. DATA NO. 1: Enters the CONFI HEAD PB mode when the CONFI switch on the keyboard panel is turned on. Enters the R/P HEAD PB mode when it is turned off.</p> <p>Factory setting: DATA NO.0 (DISABLE)</p>
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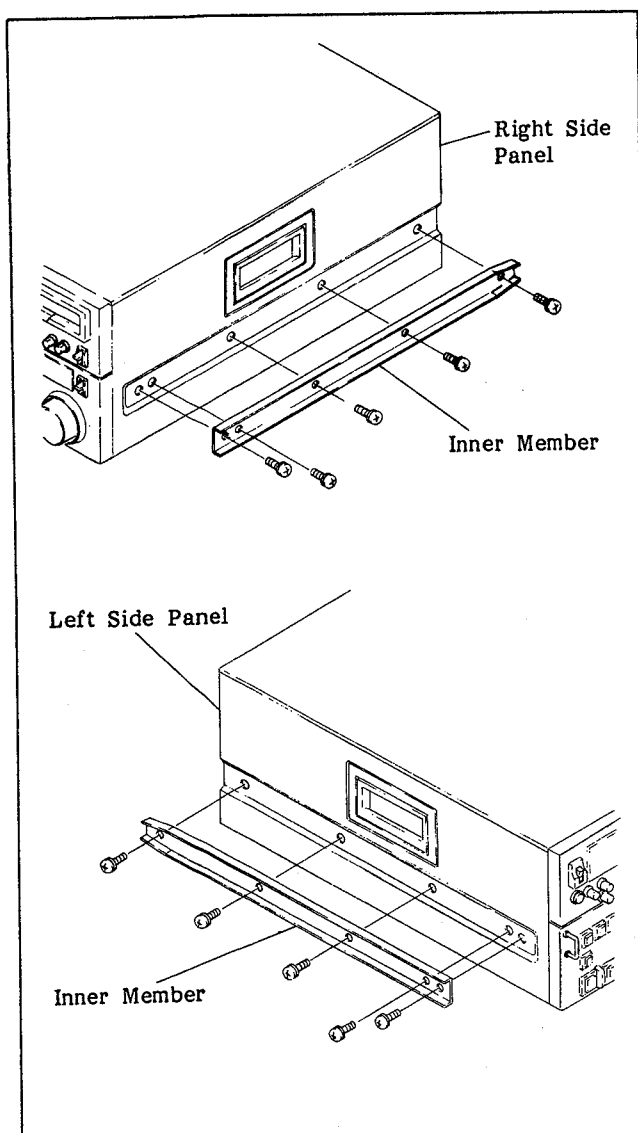
## 1-8. RACK MOUNTING

The unit can be mounted in the 19-inch standard rack. It is recommended to use the Rack Mount Kit, RMM-100, optional accessory (including the slide rails, the handle bracket and fixing screws) or the following ACCURIDE's slide rails.

. RACK-MOUNT SLIDES MODEL 305

. SLIDE LENGTH 22 INCH

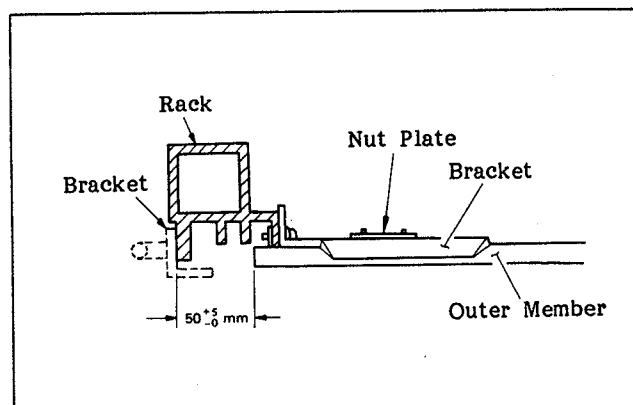
1. Remove the five fixing screws on the Right and Left Side Panels.
2. Install the Inner Members of the slide rails to the Right and Left Side Panels with the screws removed in Step (1).



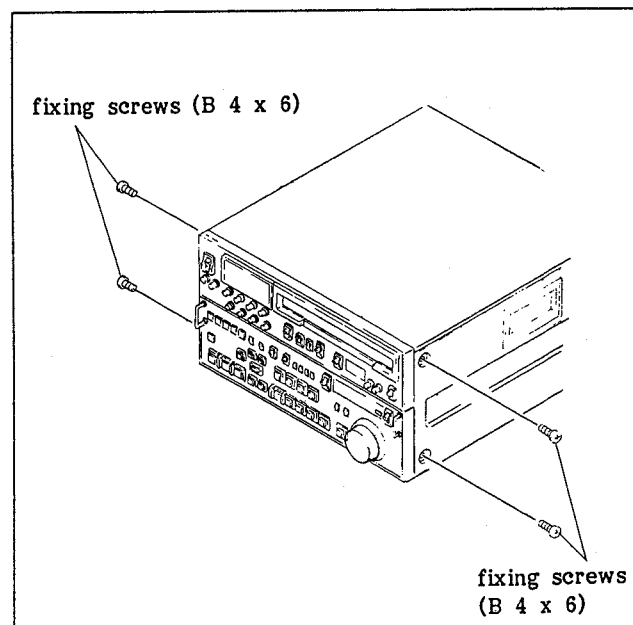
3. Remove the four feet on the Lower Panel.

. If the unit is mounted in the rack with the feet attached, they will contact the lower and the upper portions of the rack and the unit cannot be pulled out from the rack.

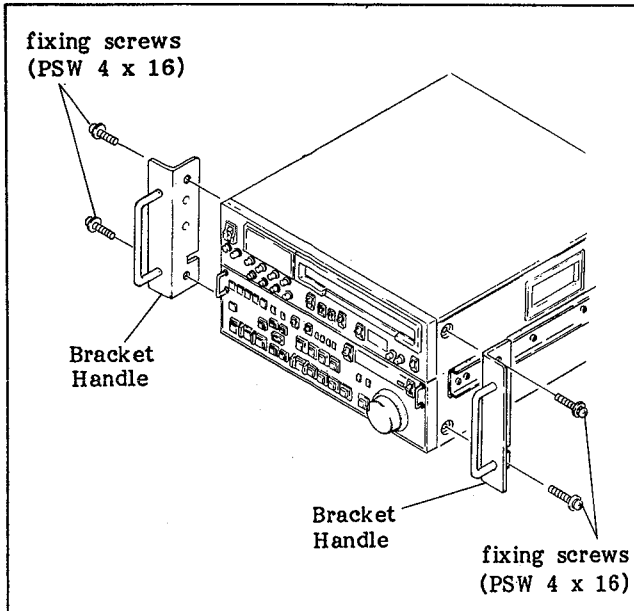
4. Install the Outer Member bracket of the slide rail to the rack. Adjust the distance from the edge of the slide rail to the outside of the rack so that it meets the required specification.



5. Remove the two fixing screws on the Right and Left Side Panels. (Be careful not to lose these four screws.)



6. Install the Handle Brackets with the supplied screws (PSW 4 x 16) for these brackets.



(NOTE) Never use screws (PSW 4 x 16) to install the Right and Left Side Panels. Be sure to install the Right and Left Side Panels with the screws (B 4 x 6) removed in Step (5). If using the screws (PSW 4 x 16) by mistake, come to cause trouble in the unit.

- NOTE:**(1) When several units are mounted in a rack, it is recommended to install a fan for ventilation. Good air circulation is essential to prevent internal heat built-up in a rack (5 ° C to 40 ° C must be met for all units).
- (2) Never remove the Upper Panel and Lower Panels during rack mounting.
- (3) Be sure to secure the rack to the floor to avoid accidents when the unit is pulled out.

#### 1-9. SUPPLIED ACCESSORIES

Supplied accessories are as follows:

1. AC Power Code
2. 9-pin Remote Control Cable; RCC-5G
3. 12-pin Dubbing Cable
4. Extension Board; EX-116  
EX-134  
EX-151
5. Screws for Rack Mounting; PSW 4 x 16 (four)

#### 1-10. OPTIONAL ACCESSORIES

The followings are provided as the optional accessories. Suitable accessories should be used for each system.

1. Rack Mount Kit (RMM-100)  
The rack mount kit is used to mount the unit with the rack mount kit, RMM-100, in a standard 19-inch rack.
2. Cleaning Cassette Tape (BCT-5CLN)
3. Remote Control Unit (BVR-75A)

## SECTION 2

### TECHNICAL INFORMATION

#### 2-1. SPECIFICATIONS

##### GENERAL

Power requirements	: AC 90 to 265 V, 48 to 64 Hz
Power consumption	: 240 W
Operating temperature	: +5°C to +40°C
Storage temperature	: -20°C to +60°C
Humidity	: Less than 80 %
Weight	: 30 Kg
Dimensions	: 427 x 237 x 520 mm (w/h/d)
Tape speed	: 101.51 mm/s
Record and playback time	: 100 minutes maximum (with a BCT-90ML cassette)
Fast forward/rewind time	: Less than 180 seconds (with a BCT-90ML cassette)
Search speed	
Shuttle mode	: Still, 1/30, 1/10, 1/5, 1/2, 1, 2, 5, and 24 times normal in forward and reverse directions.
Variable mode	: Still, 1/30, 1/10, 1/5, 1/2, and 1 times normal in forward and reverse directions. 2 times normal in forward direction.
Jog mode	: Still to 1 in forward and reverse directions.
DT (Dynamic Tracking) range	: -1 to +2 times normal
Video cassette	: 1/2-inch, Betacam, and Betacam SP cassette for Beta format.
Metal particle tape	: BCT-5M/10M/20M/30M/ BCT-5ML/10ML/20ML/30ML/60ML/90ML or equivalent
Oxide tape	: BCT-5G/10G/20G/30G/ BCT-5GL/10GL/20GL/30GL/60GL/90GL or equivalent

**Component video characteristics (component input to component output, metal tape)**

**Bandwidth (relative to REF DC LEVEL)**

Luminance	: 25 Hz to 5.5 MHz	+0.5 dB
Color difference	: 25 Hz to 2.0 MHz	-3.0 dB

**Signal-to-noise ratio**

Luminance unweighted	: More than 48 dB (SC trap: OFF, 10 kHz to 5 MHz)
Color difference unweighted	: More than 48 dB (SC trap: OFF, 10 kHz to 5 MHz)

**Y/C delay** : Less than 20 nsec

**Low frequency non-linearity**

Luminance Y	: Less than 3%
Color difference	: Less than 4%

**Pulse distortion (luminance, 2T pulse)**

K-pulse	: Less than 1.5%
K-pb	: Less than 1.0%
K-bar	: Less than 1.0%

**Pulse distortion (color difference, 8T pulse)**

K-pulse	: Less than 1.5%
K-pb	: Less than 1.0%
K-bar	: Less than 1.0%

**Component video characteristics (component input to component output, oxide tape)**

**Bandwidth (relative to REF DC LEVEL)**

Luminance	: 25 Hz to 4.0 MHz	+0.5 dB
Color difference	: 25 Hz to 1.5 MHz	-6.0 dB

**Signal-to-noise ratio**

Luminance unweighted	: More than 46 dB (SC trap: OFF, 10 kHz to 5 MHz)
Color difference unweighted	: More than 45 dB (SC trap: OFF, 10 kHz to 5 MHz)

**Y/C delay** : Less than 20 nsec

**Low frequency non-linearity**

Luminance Y	: Less than 3%
Color difference	: Less than 4%

**Pulse distortion (luminance, 2T pulse)**

K-pulse	: Less than 3.0%
---------	------------------

**Pulse distortion (color difference, 8T pulse)**

K-pulse	: Less than 3.0%
---------	------------------

## Component input/output parameters

### Input

#### DUB/COMPONENT 1

Input impedance	: 75 ohms
Input video amplitude	: 100/0/100/0 color bars
Luminance with sync	: 1.0 V p-p
Color difference	: 0.7 V p-p

#### COMPONENT 2

Input impedance	: 75 ohms
Input video amplitude	: 100/0/100/0 color bars
Luminance with sync	: 1.0 V p-p
Color difference	: 0.7 V p-p

### Output

#### DUB/COMPONENT 1

Output impedance	: 75 ohms
Output video amplitude	: 100/0/100/0 color bars
Luminance with sync	: 1.0 V p-p $\pm 2\%$
Color difference	: 0.7 V p-p $\pm 2\%$

#### COMPONENT 2

Output impedance	: 75 ohms
Output video amplitude	: 100/0/100/0 color bars
Luminance with sync	: 1.0 V p-p $\pm 2\%$
Color difference	: 0.7 V p-p $\pm 2\%$

## Composite input/output parameters

### Input

Input impedance	: 75 ohms
Reference video amplitude	: 1 V p-p
Composite video amplitude	: 1 V p-p

### Output

Output impedance	: 75 ohms
Reference video amplitude	: 0.3 V p-p (BS)
Composite video amplitude	: 1 V p-p

---

The input/output level of a component signal conforms to the EBU N-10 standard.

**Longitudinal audio characteristics (metal tape)**

**Frequency response**

20 dB below peak level (peak level = +8 dB : 50 Hz to 15.0 kHz  $\begin{smallmatrix} +1.0 \\ -2.0 \end{smallmatrix}$  dB  
above \*operational level)

**Signal-to-noise ratio**

Referred to peak level (peak level = +8 dB : More than 68 dB (weighted CCIR 468-3)  
above \*operational level)

Distortion K3 at peak level (peak level = +8 dB : Less than 3% (at 1 kHz)  
above \*operational level)

Wow and flutter (DIN 45507) : Less than 0.1%

Crosstalk : More than 71 dB (at 1 kHz)

Stereo phase :  $\pm 20^\circ$  (at 15 kHz)

Erase ratio : More than 65 dB (at 1 kHz)

**FM audio characteristics (metal tape only)**

**Frequency response**

20 dB below peak level (peak level = +19 dB : 20 Hz to 20.0 kHz  $\begin{smallmatrix} +0.5 \\ -2.0 \end{smallmatrix}$  dB  
above \*operational level)

**Signal to noise ratio**

Referred to peak level (peak level = +19 dB : More than 72 dB (weighted CCIR 468-3)  
above \*operational level)

Distortion K3 at \*operational level (0 VU) : Less than 0.5% (at 1 kHz)

Crosstalk : More than 70 dB (100 Hz to 12.5 kHz)

Stereo phase :  $\pm 10^\circ$  (at 20 kHz)

**Longitudinal audio characteristics (oxide tape): without A.N.R**

**Frequency response**

20 dB below peak level (peak level = +8 dB : 50 Hz to 15.0 kHz  $\pm 3$  dB  
above \*operational level)

**Signal-to-noise ratio**

Referred to peak level (peak level = +8 dB : More than 62 dB (weighted CCIR 468-3)(with A.N.R.)  
above \*operational level)

Distortion K3 at peak level (peak level = +8 dB : Less than 3% (at 1 kHz)  
above \*operational level)

Wow and flutter (DIN 45507) : Less than 0.1%

Crosstalk : More than 60 dB (at 1 kHz)

Stereo phase :  $\pm 45^\circ$  (at 15 kHz)

Erase ratio : More than 65 dB (at 1 kHz)

\* Operational level = +4 dBm



### Input/output parameters

#### Input

Audio line input level : -10 to +32 dBu (nominal: +4 dBu), 600 ohms/  
10 kohms, balanced

Microphone input level : -74 to -32 dBu (nominal: -60 dBu), 600 ohms/  
3 kohms, balanced

#### Output

Audio line output level : -∞ to +14 dBu (nominal: +4 dBu), 600 ohms,  
balanced

Monitoring output level : -∞ to +14 dBu (nominal: +4 dBu), 600 ohms,  
balanced

Headphones output level : -∞ to -12 dBu, 8 ohms, unbalanced

### Processor adjustment range

Video level : ±3 dB

Chroma level : ±3 dB

Black level : ±100 mV

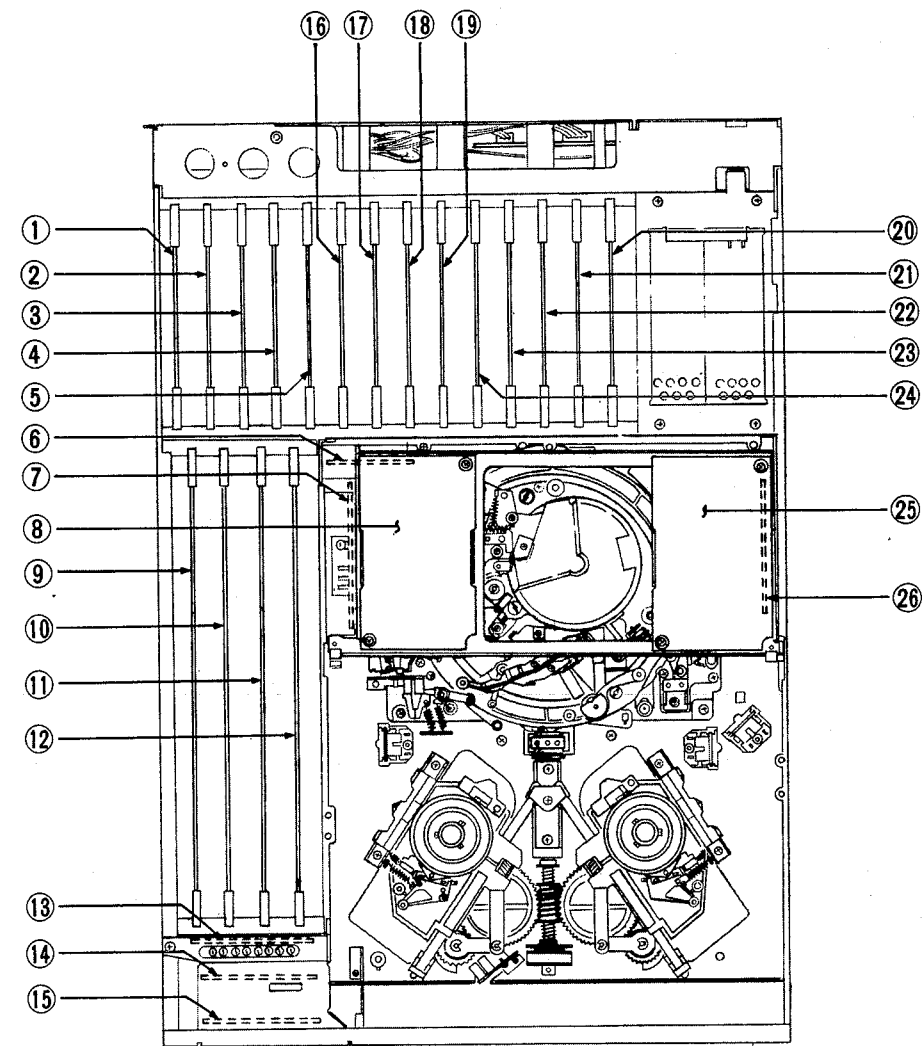
System SC phase : 360° p-p

System sync phase :  $\pm \frac{3}{1}$  μs (fine adjustment range 300 ns)

Y/C delay : ±50 ns

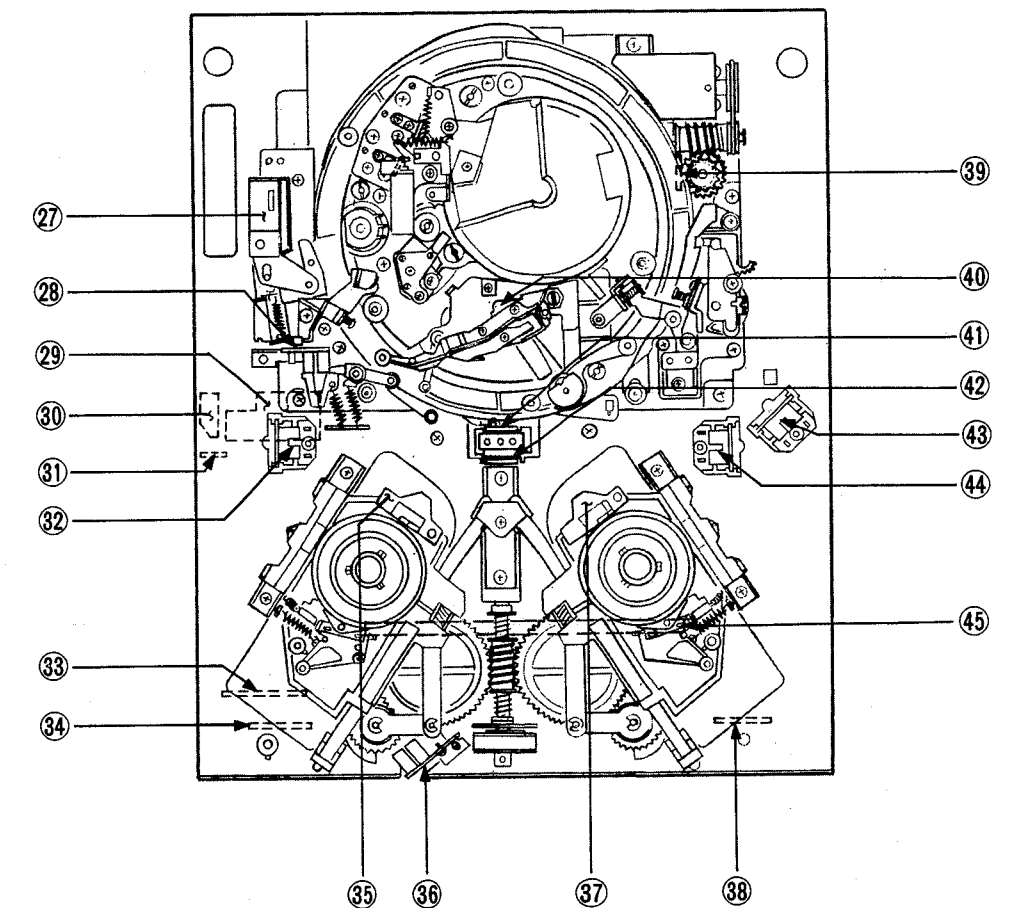
## 2-2. LOCATION OF THE PRINTED CIRCUIT BOARDS

TOP VIEW



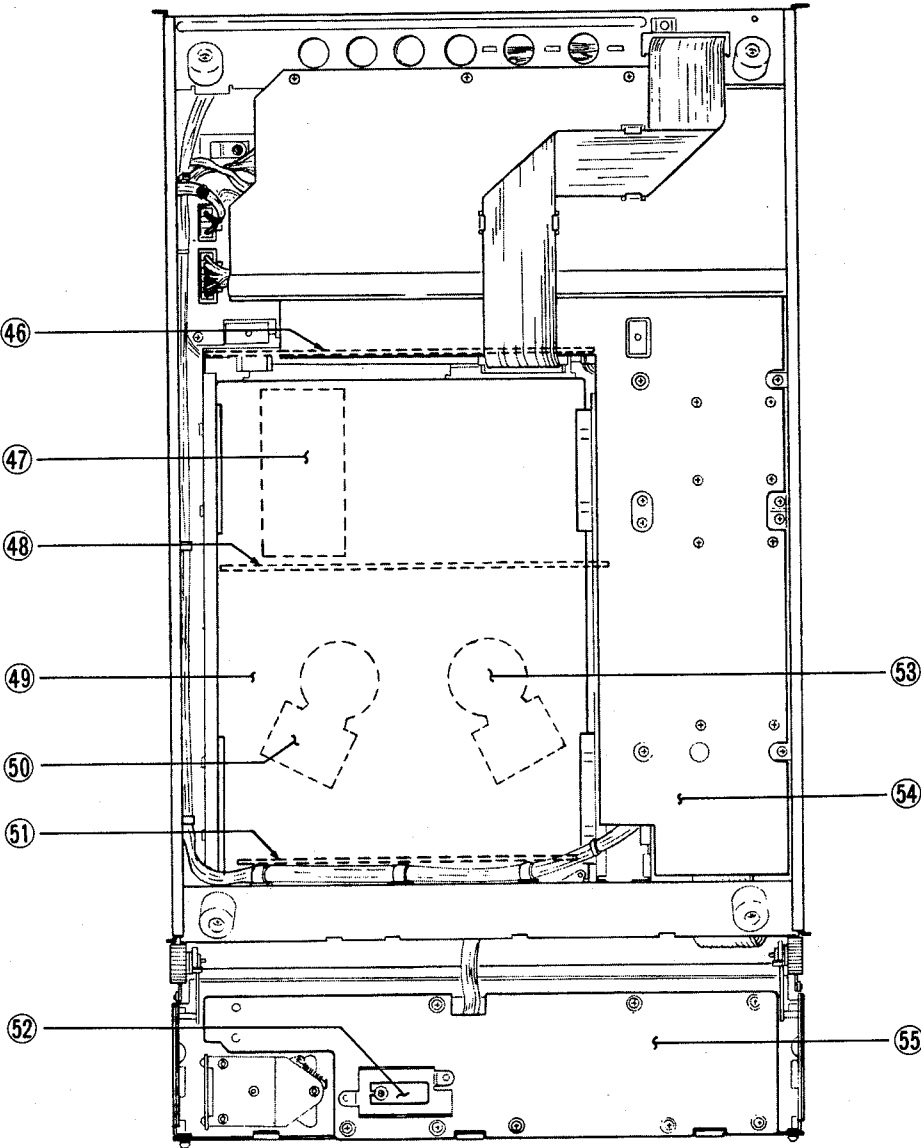
- |                    |                 |                    |
|--------------------|-----------------|--------------------|
| ① TBC-9P Board     | ⑨ TBC-12P Board | ⑮ AU-76P Board     |
| ② EN-48P Board     | ⑩ TBC-7D Board  | ⑯ TC-40P Board     |
| ③ VO-18P Board     | ⑪ DM-56P Board  | ⑰ DT-14P Board     |
| ④ MD-46P Board     | ⑫ DEC-42P Board | ⑱ DT-13 Board      |
| ⑤ DEC-46P Board    | ⑬ BF-28 Board   | ⑲ SV-84P Board     |
| ⑥ RE-34 Board      | ⑭ DP-73 Board   | ⑳ SV-83 Board      |
| ⑦ DT-15 Board      | ⑮ DP-74 Board   | ㉑ SV-82 Board      |
| ⑧ RP-29P (C) Board | ⑯ AFM-1 Board   | ㉒ RP-29P (Y) Board |
|                    | ⑰ AU-75P Board  | ㉓ SE-57 Board      |

TOP VIEW



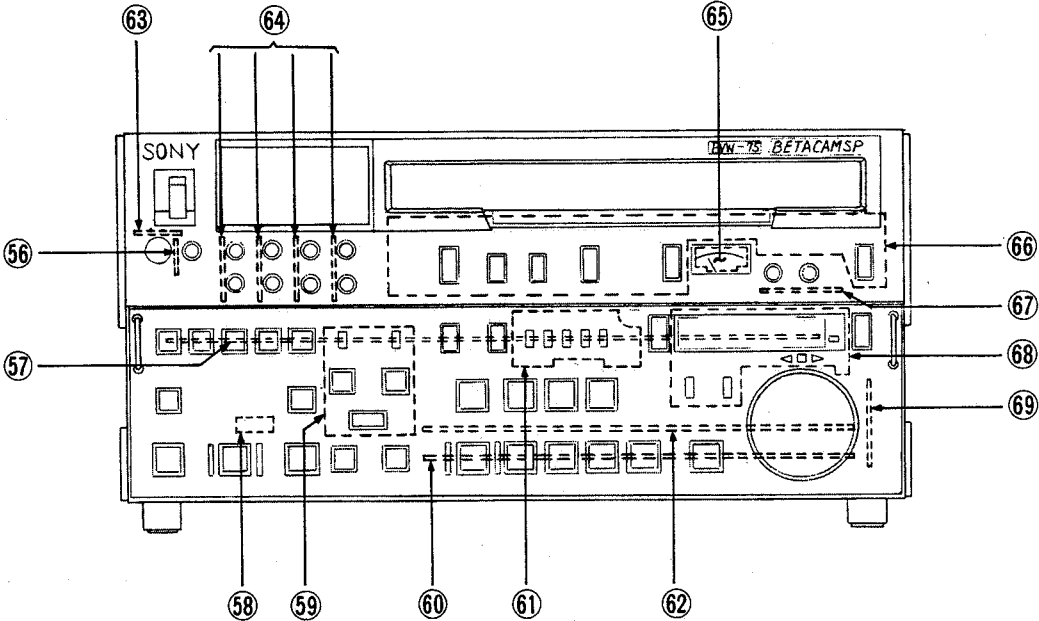
- |   |   |
|---|---|
| ⑳ PD-35 Board                           | ㉗ DE-15 Board                           |
| ㉑ PTC-15 Board                          | ㉘ PC-41 Board (Cassette-up Compartment) |
| ㉒ CL-14 Board (Cassette-up Compartment) | ㉙ PTC-31 Board                          |
| ㉓ PC-33 Board (Cassette-up Compartment) | ㉚ TR-18 Board                           |
| ㉔ PC-33 Board (Cassette-up Compartment) | ㉛ PTC-20 Board                          |
| ㉕ PTC-23 Board                          | ㉜ PTC-36 Board                          |
| ㉖ PC-47 Board (Cassette-up Compartment) | ㉝ PTC-23 Board                          |
| ㉗ PC-41 Board (Cassette-up Compartment) | ㉞ PTC-23 Board                          |
| ㉘ DE-15 Board                           | ㉟ CL-24 Board (Cassette-up Compartment) |
| ㉙ PTC-21 Board                          | (Serial No. 15272 and higher)           |

**BOTTOM VIEW**

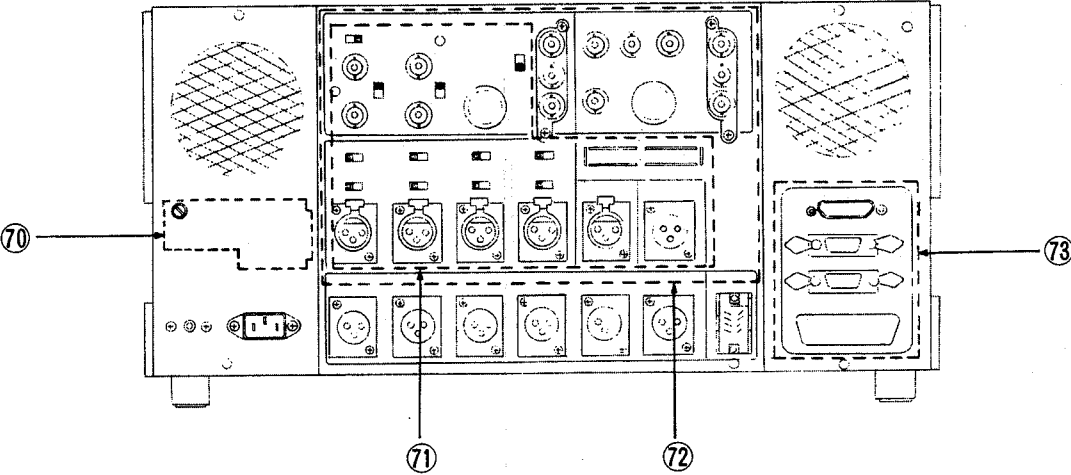


- ④⑥ MB-192 Board
- ④⑦ RE-28 Board
- ④⑧ DR-56 Board
- ④⑨ SY-61 Board
- ⑤① RM-40 Board
- ⑤② RE-36 Board
- ⑤③ PT-9 Board
- ⑤④ RM-40 Board
- ⑤⑤ MB-191 Board
- ⑤⑥ KY-96 Board

**FRONT VIEW**



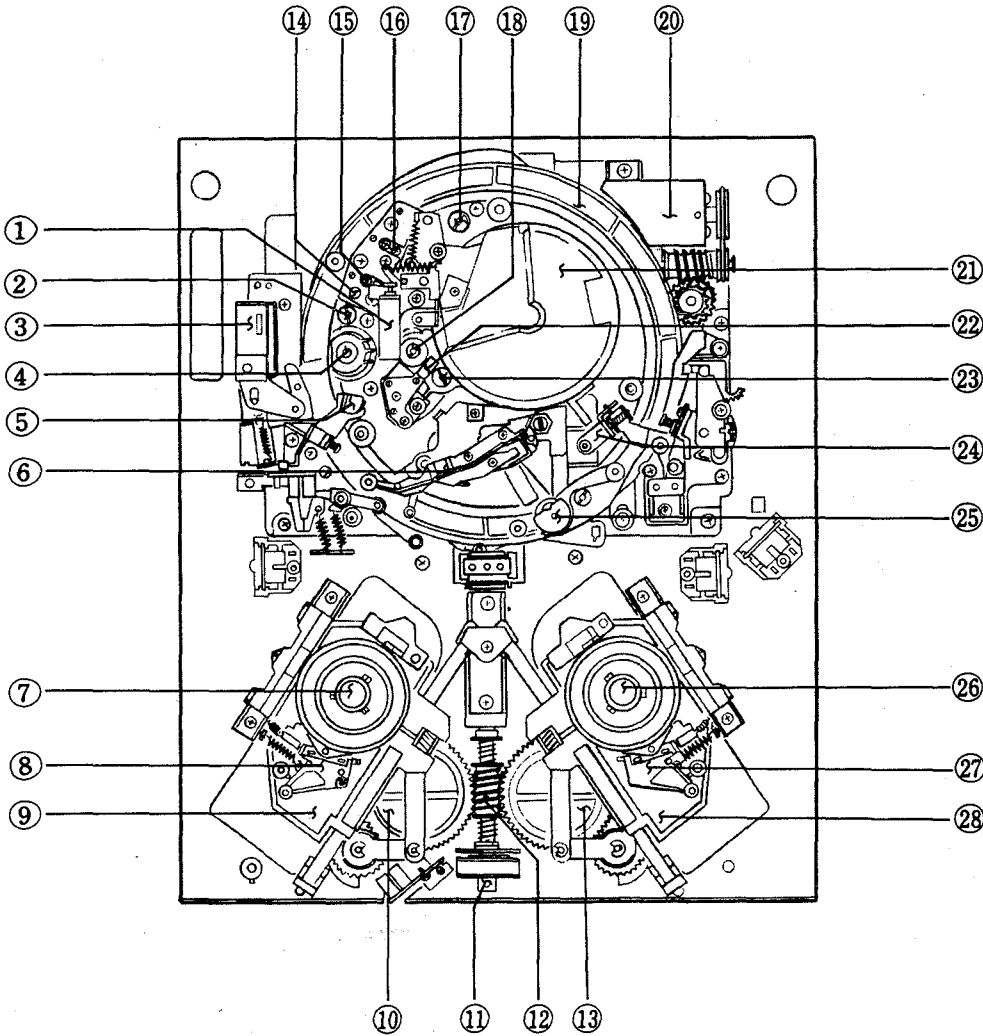
**REAR VIEW**



- |                  |                 |                         |
|------------------|-----------------|-------------------------|
| ⑤⑥ HP-33 Board   | ⑥③ VR-62 Board  | ⑦① AC-96 Board          |
| ⑤⑦ CP-103P Board | ⑥④ VR-42 Board  | ⑦② CP-101P Board        |
| ⑤⑧ HC-11 Board   | ⑥⑤ DP-72 Board  | ⑦③ CP-111/CP-161A Board |
| ⑤⑨ KY-107 Board  | ⑥⑥ SW-144 Board | ⑦④ RM-57 Board          |
| ⑥① SY-61 Board   | ⑥⑦ VR-61 Board  |                         |
| ⑥② KY-108 Board  | ⑥⑧ DP-71 Board  |                         |
| ⑥③ SY-64P Board  | ⑥⑨ PTC-32 Board |                         |

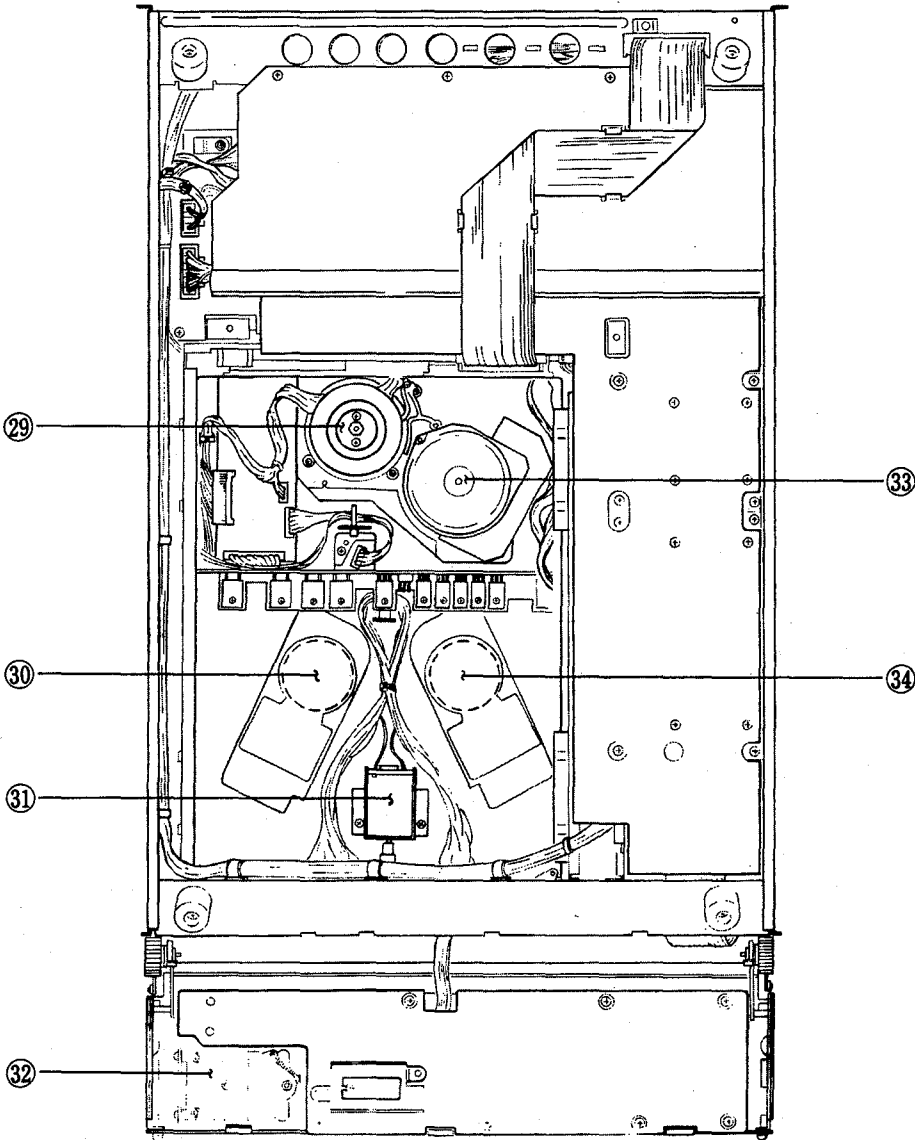
2-3. LOCATION OF THE MAIN MECHANICAL PARTS/COMPONENTS

TOP VIEW



- |                         |                         |                       |
|-------------------------|-------------------------|-----------------------|
| ① Cleaning Roller Block | ⑪ Timing Pulley         | ⑳ Head Drum           |
| ② TG-4                  | ⑫ Worm Gear             | ㉑ CTL Head            |
| ③ Pinch Solenoid        | ⑬ Take-up Worm Wheel    | ㉒ TG-2                |
| ④ Capstan Shaft         | ⑭ AT Head Block         | ㉓ T Drawer Arm        |
| ⑤ Full Erase Head       | ⑮ Audio Confidence Head | ㉔ Pinch Roller        |
| ⑥ S Tension Regulator   | ⑯ Audio/TC Head         | ㉕ Take-up Reel Table  |
| ⑦ Supply Reel Table     | ⑰ TG-3                  | ㉖ Take-up Brake Ass'y |
| ⑧ Supply Brake Ass'y    | ⑱ TG-1                  | ㉗ Take-up Motor Plate |
| ⑨ Supply Motor Plate    | ㉙ Threading Ring        |                       |
| ⑩ Supply Worm Wheel     | ㉚ Gear Box              |                       |

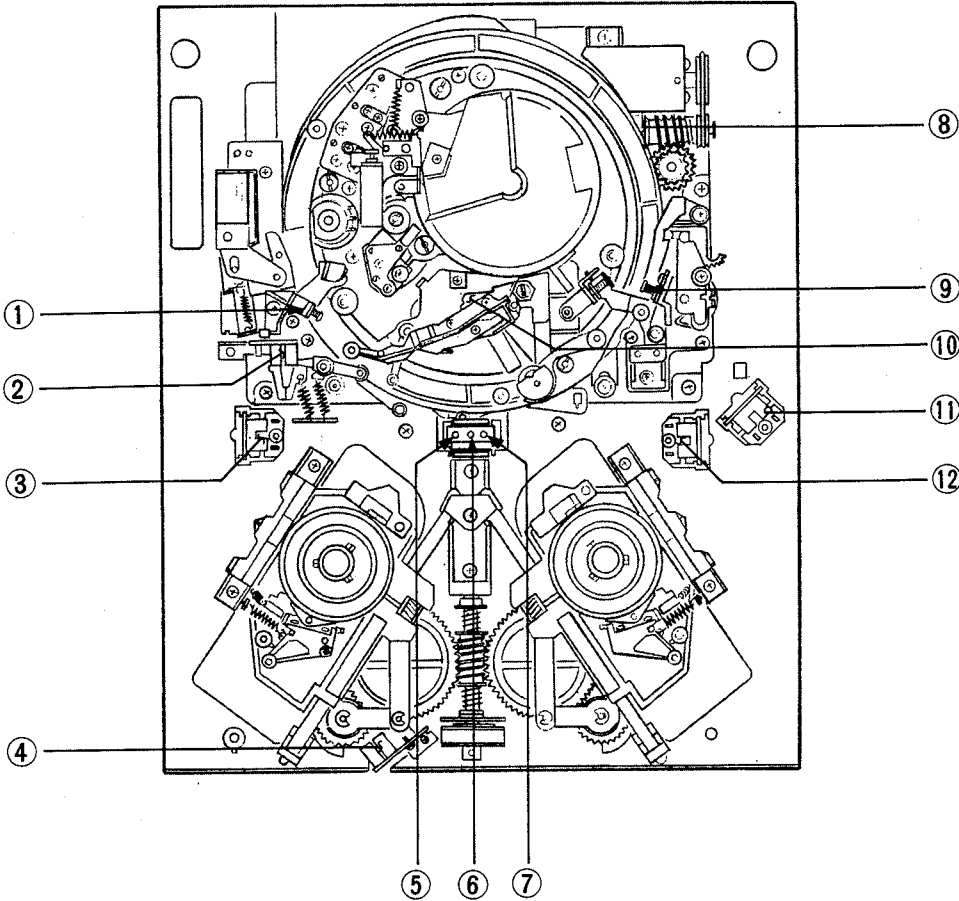
BOTTOM VIEW



- |                       |
|-----------------------|
| ㉙ Drum                |
| ㉚ Take-up Reel Motor  |
| ㉛ Reel Transfer Motor |
| ㉜ Search Dial Block   |
| ㉝ Capstan Motor       |
| ㉞ Supply Reel Motor   |

# 2-4. LOCATION OF THE SENSORS

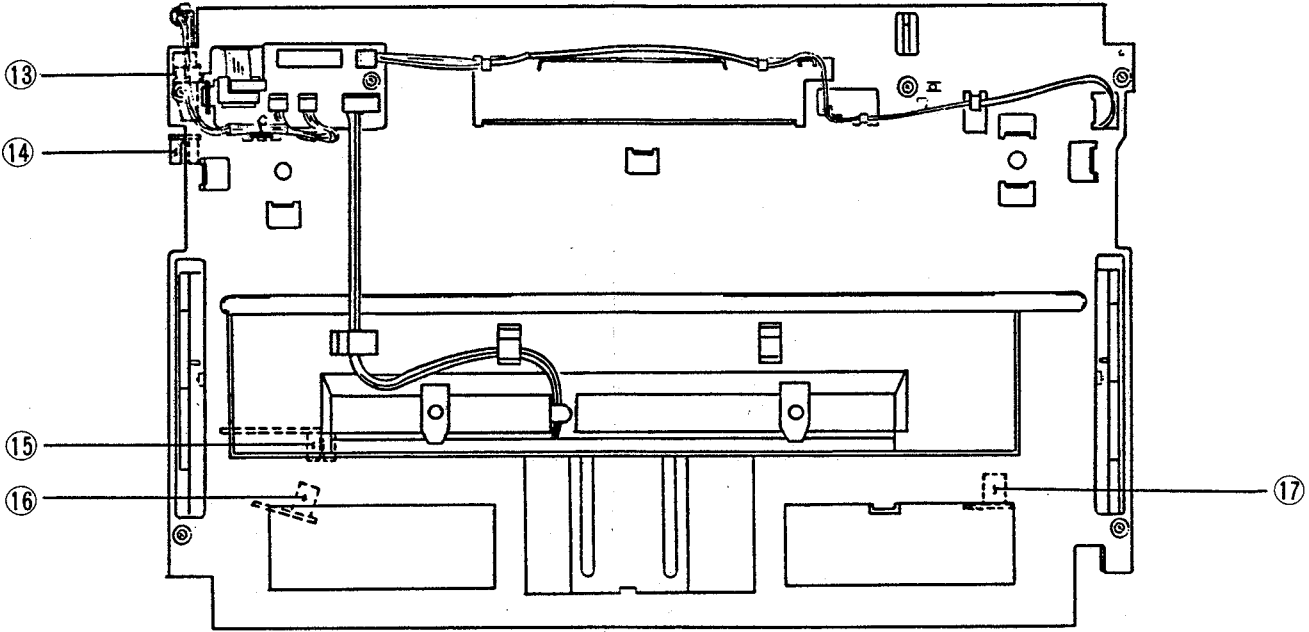
## TOP VIEW



- |  |   |
|--|---|
| ① Tape End Sensor                                      | ⑦ Video Tape Thickness Detection Switch       |
| ② Ring Sensor  | ⑧ Threading Speed Detection Sensor            |
| ③ S Cassette MISS-REC Switch (for metal particle tape) | ⑨ Tape Beginning Sensor                       |
| ④ Reel Table L/S Position Detection Sensor             | ⑩ Tape Tension Sensor                         |
| ⑤ Reel Hub Diameter Detection Switch                   | ⑪ L Cassette MISS-REC Switch                  |
| ⑥ Oxide/Metal Particle Tape Detection Switch           | ⑫ S Cassette MISS-REC Switch (for oxide tape) |

\* The "S cassette" or "small cassette" described in the Maintenance Manual indicates a standard cassette.

## TOP VIEW OF THE CASSETTE-UP COMPARTMENT



- |                                      |
|--------------------------------------|
| ⑬ Cassette-down Switch (2)           |
| ⑭ Cassette-down Switch (1)           |
| ⑮ Cassette L/S Size Detection Switch |
| ⑯ Cassette-in Switch (L)             |
| ⑰ Cassette-in Switch (R)             |

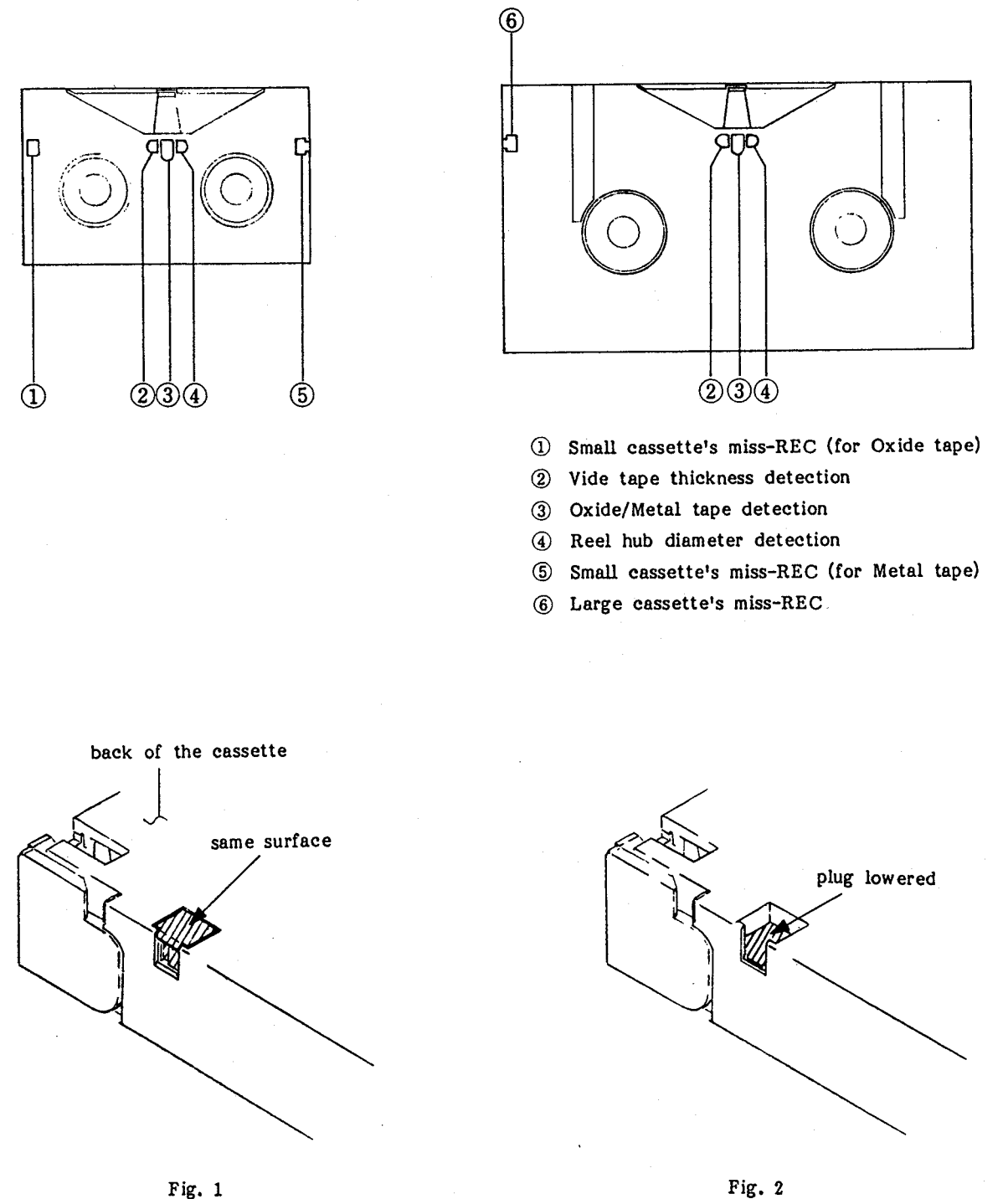
## 2-5. FUNCTIONS OF THE SENSORS AND CASSETTE TAB

### 2-5-1. Function of the Sensors

1. Reel Table L/S Position Detection Sensor  
(Sec. 2-4 (4) )  
 . The sensor detects whether the Reel Table moves to the correct position according to the size of the inserted cassette.
2. Ring Sensor  
(Sec. 2-4 (2) )  
 . The sensor detects whether the Threading Ring reaches the THREAD END or UNTHREAD END position.
3. Tape Tension Sensor  
(Sec. 2-4 (10) )  
 . During recording or playback, a tension arm is activated to keep a constant tape tension at the drum entrance. The Tape Tension Sensor detects the position of the tension arm.
4. Threading Speed Detection Sensor  
(Sec. 2-4 (8) )  
 . During threading, the Threading Ring rotation speed is controlled using a servo circuit to protect the tape from damage. The Threading Ring rotation speed is detected using the Threading Speed Detection Sensor installed into the Gear Box Block.
5. S Cassette Miss-REC Switch  
(Sec. 2-4 (3) )  
(for metal particle tape)  
 . This is a record-proof switch for the small cassette for metal particle tape.
6. Reel Hub Diameter Detection Switch  
(Sec. 2-4 (5) )  
 . The reel hub diameter varies depending on the length of the tape wound on a cassette. The diameter is detected using the Reel Hub Diameter Detection Switch. The resultant data is sent to the servo circuit.
7. Oxide/Metal Particle Tape Detection Switch  
(Sec. 2-4 (6) )  
 . This switch detects whether an oxide tape or a metal particle tape is being used.
8. Video Tape Thickness Detection Switch  
(Sec. 2-4 (7) )  
 . This switch detects the thickness of the video tape wound on a cassette.
9. S Cassette Miss-REC Switch (for oxide tape)  
(Sec. 2-4 (12) )  
 . This is a record-proof switch for the small cassette for oxide tape.
10. L Cassette Miss-REC Switch (for Oxide and Metal Tapes)  
(Sec. 2-4 (11) )  
 . This is a record-proof switch for the large cassette of Oxide and Metal tapes.
11. Cassette L/S Size Detection Switch  
(Sec. 2-4 (15) )  
 . This switch detects whether the inserted cassette is large or small.
12. Cassette-in Switch (L)/Cassette-in Switch (R)  
(Sec. 2-4 (16), (17) )  
 . This switch detects whether a cassette is being inserted.
13. Cassette-down Switch (1)  
(Sec. 2-4 (14) )  
 . This switch detects whether a cassette is inserted and the Cassette-up Compartment goes down.  
 . It detects whether the Cassette-up Compartment goes up in the EJECT mode.
14. Cassette-down Switch (2)  
(Sec. 2-4 (13) )  
 . This switch checks whether the Reel Table moves to the correct position according to the size of the inserted cassette.

### 2-5-2. Function of the Cassette Plug and Tab

As shown in the figure below, plugs and tabs are provided at the back of the video cassette.



The presence or absence of these plugs and tabs determines the cassette status as shown in the table below.

Plug and tab	Cassette status with plugs and tabs	Cassette status without plugs and tabs
Small cassette miss-REC (for oxide tape)	Can be recorded.	Cannot be recorded. * When recording is required, cover the former location of the tab with vinyl tape.
Small cassette miss-REC (for metal particle tape)	Can be recorded (the plug is located on the same surface as the back of the cassette) (refer to Fig. 1).	Cannot be recorded (the plug is lower than the back of the cassette) (refer to Fig. 2). * When recording is required, raise the plug.
Large cassette miss-REC	Can be recorded (the plug is located on the same surface as the back of the cassette) (refer to Fig. 1).	Cannot be recorded (the plug is lower than the back of the cassette) (refer to Fig. 2). * When recording is required, raise the plug.
Tape thickness	A 20um thick tape is wound on the cassette.	A 15um thick tape is wound on the cassette.
Oxide/Metal tape detection	An oxide tape is wound on the cassette.	A metal particle tape is wound on the cassette.
Reel hub diameter	For small hub	For large hub

## 2-6. PRINTED CIRCUIT BOARDS

The circuit information is provided below.

System	Board	Circuit function
VIDEO	DEC-46P	Y/C Separator
	DUS-288	Y/C Delay Adj.
	DEC-42P	C Decoder, C Compressor, Y Selector
	CF-36P	Color Framing Detector
	MD-46P	Y/C Modulator
	RP-29P(Y)	Y REC/PB Amplifier
	RP-29P(C)	C REC/PB Amplifier
	DM-56P	Y/C Demodulator
	DUS-259	Metal/Oxide LPF Switch
	DUS-269	C RF Phase EQ.
	DUS-288	DO RF EQ.
	EQ-26	RF EQ.
	EQ-28	RF EQ.
	TBC-7D	Time Base Corrector
	TBC-12P	Time Base Corrector
	NR-32	Y Digital Noise Reduction, Read Clock Generator
	TBC-9P	Time Base Corrector
	EN-48P	C Encoder
	VO-18P	Video Output
	DUS-270	Squelch Buffer
	RE-34	Rotary Erase
	CP-103P	Sub Control Panel
	CP-101P	Video/Audio Input

System	Board	Circuit function
AUDIO	BF-28	Audio Buffer/Level Detector
	VR-42	Audio REC/PB Volume
	AU-75P	LNG Audio REC/PB Amplifier
	DUS-295	Cross Talk Cancel EQ.
	AU-76P	LNG Audio Head Amplifier, Bias Oscillator
	AFM-1	AFM Audio Modulator/Demodulator
	FL-61	Low-Pass Filter
	CP-111	Audio Output
	CP-161A	Amplifier/Driver
	CP-113	Audio Balanced Amplifier
	HP-33	Headphones Amplifier/Jack
	VR-62	Headphones Level Volume
	DP-74	Audio Level Meter
	DP-73	DC-AC/DC Converter
	SW-144	Select Switch/Display
	DP-72	Video/RF Meter LED
	VR-61	Video/Tracking Control Volume



System	Board	Circuit function
SERVO	SV-82	Microcomputer Servo
	SV-83	Reel Servo
	SV-84P	Capstan/Drum Servo
	RE-28	Capstan/Drum Motor Driver
	PTC-20	Cassette Detector (Tape Thickness, Reel Hub Diameter, Metal/Oxide)
	PTC-36	Cassette Detector (Tape Thickness, Reel Hub Diameter, Metal/Oxide)
	PTC-21	Reel Table Position Detector
	PTC-23	REC Inhibit Detector
	DR-56	Capstan/Reel Motor Driver & Drum Error Amplifier
	RE-36	Reel Motor Driver
	RM-40	Reel Motor
	DE-15	Reel Motor FG
	SE-57	Threading Motor Control
	PTC-31	Threading Motor FG
	TR-18	Tape Tension Sensor
	DT-13	Dynamic Tracking
	DT-14P	Dynamic Tracking
	DUS-282	Strain Gage Buffer
	DT-15	Dynamic Tracking

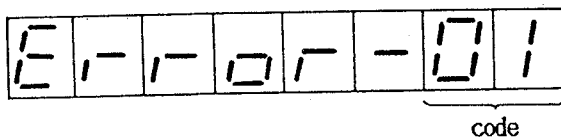
System	Board	Circuit function
SYSTEM CONTROL	SY-61	System Control
	SY-64P	Time Code Reader/Generator
	RM-57	Remote Connector
	PD-35	Pinch/Cleaning Solenoid
	PTC-15	Thread/Unthread End Sensor
	CL-14	Cassette-up Compartment
	CL-24*1	Cassette-up Compartment LED
	PC-47	Large/Small Cassette Detector
	PC-33	Cassette Down Detector
	PC-41	Cassette In Detector
	CCM-2	UP/DOWN Motor
	HC-11	Hours Meter
	KY-96	Keyboard
	KY-107	Keyboard
	KY-108	Keyboard
	DP-71	Time Counter Display
	PTC-32	Search Dial
	PT-9	Power Transistor
	TC-40P	LTC REC/PB Amplifier, Erase Driver
OTHERS	AC-96	Relay Board of AC Inlet
	M1	Switching Regulator
	M2	Switching Regulator
	C1	Switching Regulator
	C2	Switching Regulator
	MB-191	Mother Board
	MB-192	Mother Board
	EX-116	Extension Board
	EX-134	Extension Board
	EX-151	Extension Board

\*1...Serial No. 15272 and higher.

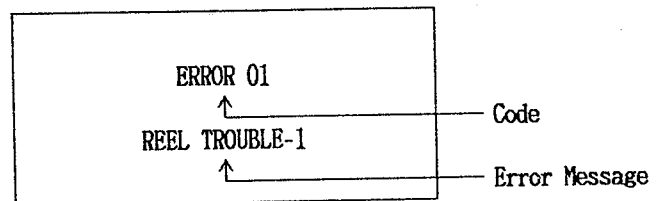
## 2-7. SELF DIAGNOSIS FUNCTION

The unit has a self diagnosis to isolate the troubles described below. When the troubles are detected, an error message is displayed on the function control panel's time counter display and monitor television. (To display the error message on the monitor television, connect a monitor television to the VIDEO OUT-3 connector on the connector panel and set the CHARACTER ON/OFF switch on the SY-61 board to on.)

Time counter display on the function control panel

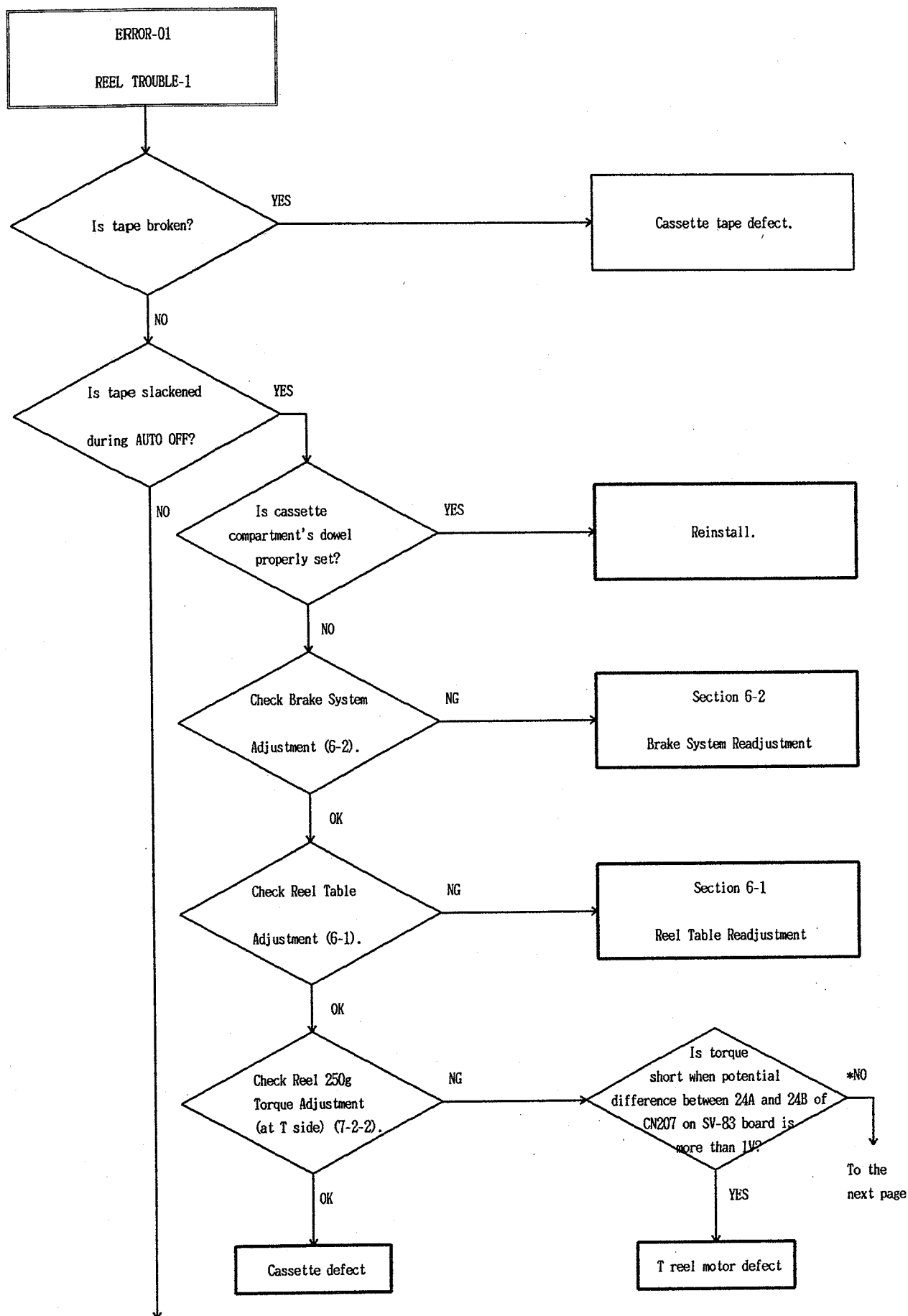


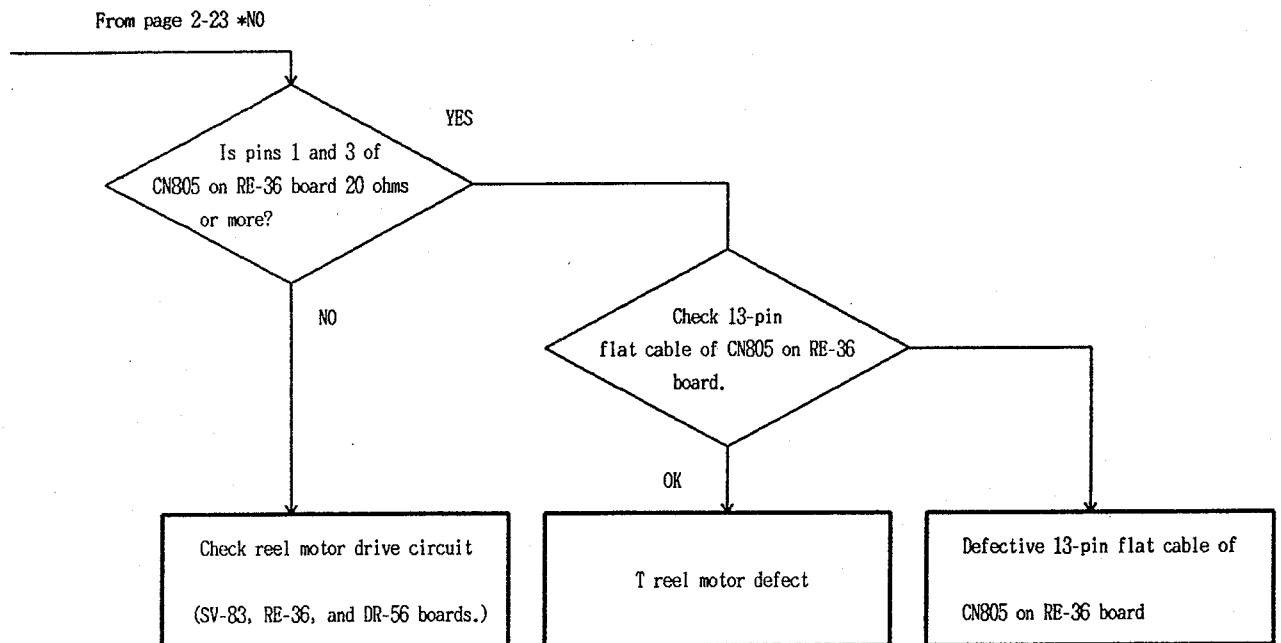
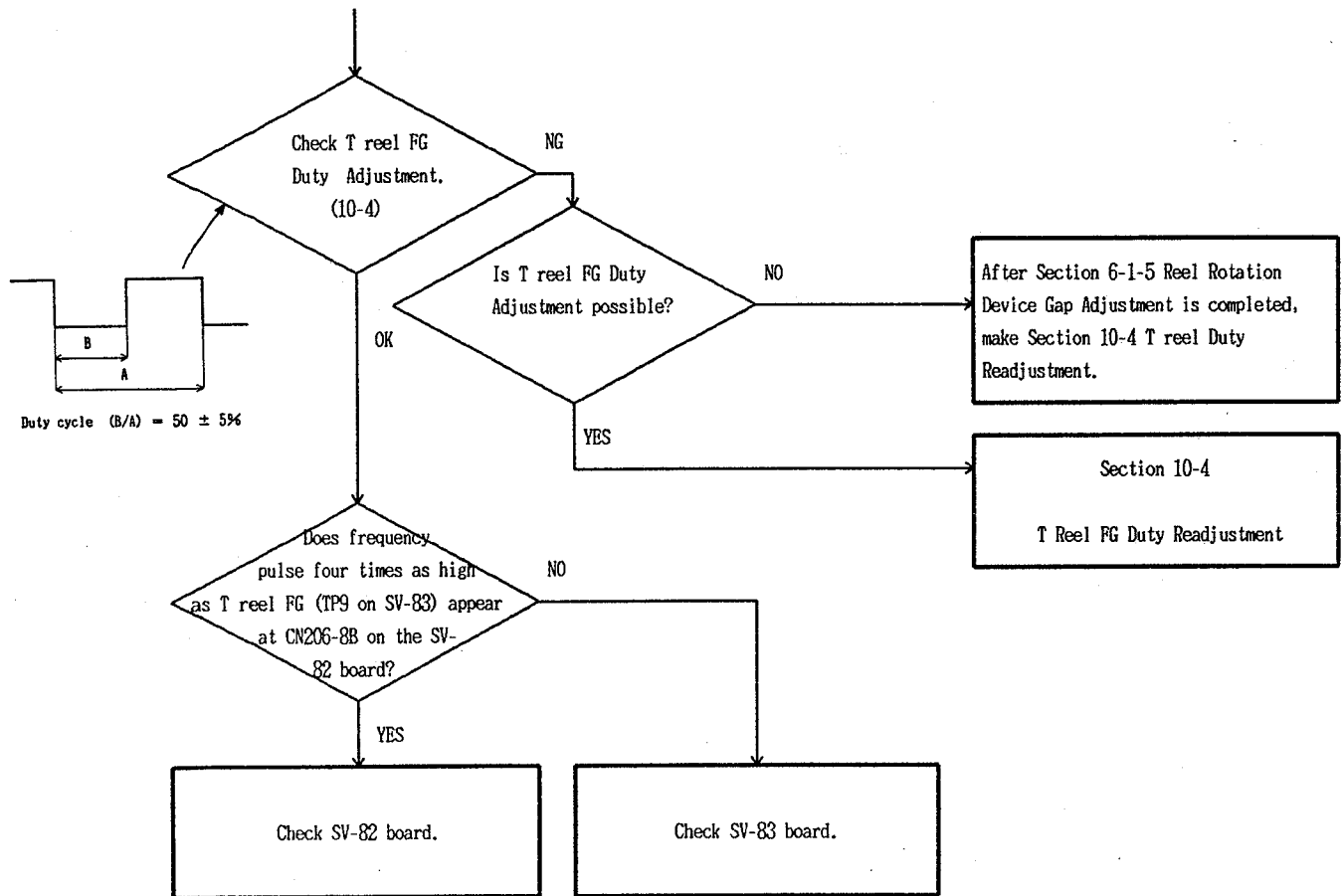
CHARACTER display

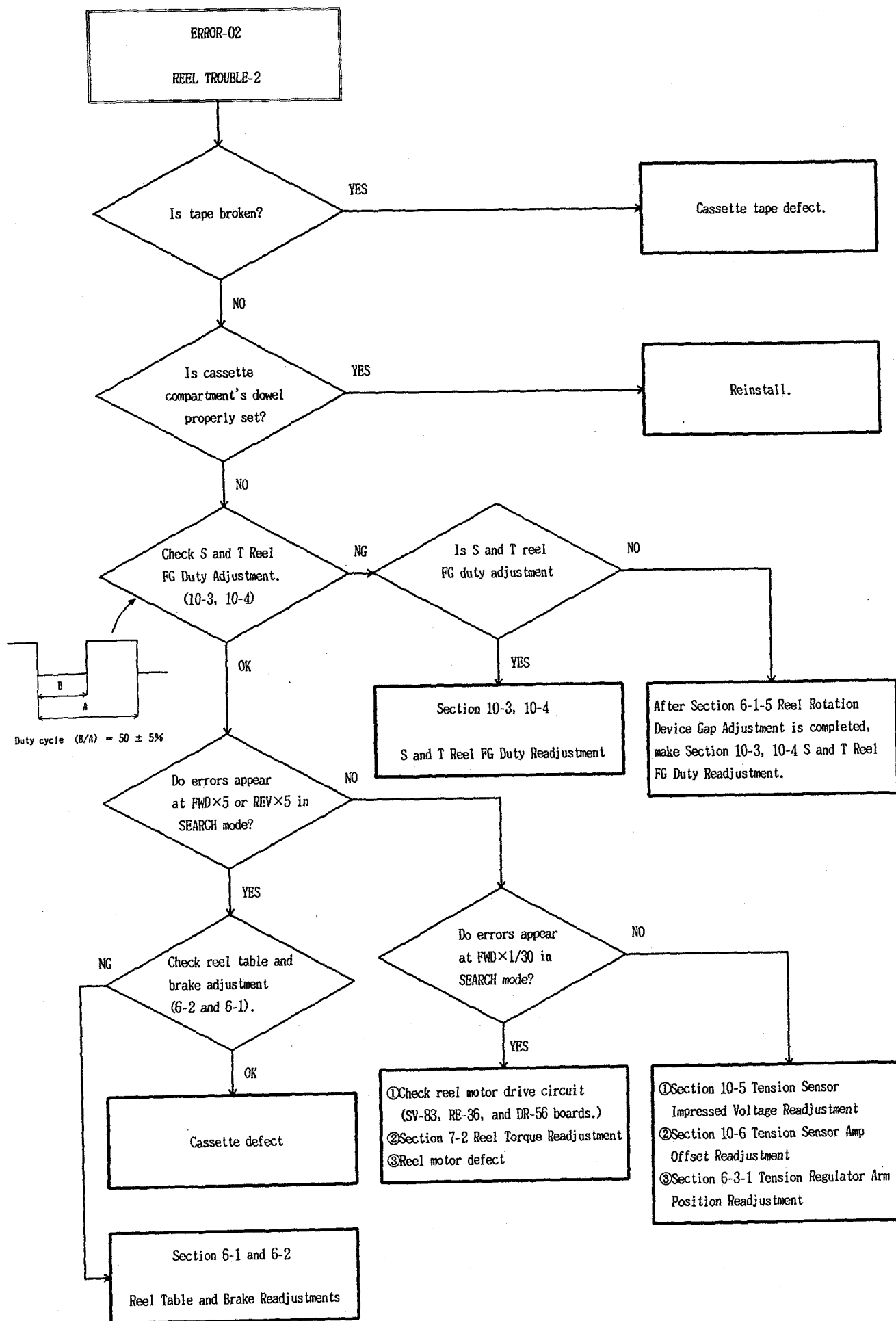


Code	Error message	Description	Detection
01	REEL TROUBLE-1	When tape slacking is detected during unthreading or tape breaking is detected during threading, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a take-up reel and threading ring is less than the specified value.
02	REEL TROUBLE-2	When tape breaking is detected in REC, SEARCH, F.FWD, and REW modes, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a supply reel and take-up reel is less than the specified value.
03	REEL TROUBLE-3	When tape breaking is detected or either of the locked supply or take-up reel is detected, tape protection operation is done and this message is displayed.	Detected when the ratio of the FG frequency at a supply or take-up reel is zero (0), or when the tension detected from a tension sensor is less than 15g.
04	REEL TROUBLE-4	When the tape does not run at the speed designated in F.FWD and REW modes, tape protection operation is done and this message is displayed.	Detected when the tape speed using the FG frequency at supply and take-up reels is compared with the designated speed.
05	REEL TROUBLE-5	Detected when the supply and take-up reels cannot be stopped with the cassette not inserted.	Detected using the FG frequency at supply and take-up reels.
06	TAPE TENSION ERROR	When excessive tension is detected, tape protection operation is done this message is displayed.	Detected when the tension detected from a tension sensor is more than 55g.
07	CAPSTAN TROUBLE	When the tape does not run at the speed designated in PLAY and SEARCH modes, tape protection operation is done and this message is displayed.	Detected at the tape speed detected from the FG frequency at a capstan motor.
08	DRUM TROUBLE	When drum motor rotation is not normal, tape protection operation is done and this message is displayed.	Detected when the drum speed obtained from the drum motor's phase PG and speed PG is less than the specified value or when the drum servo is not locked for more than the specified time.
09	TH/UNTH MOTOR TIME OUT	When threading or unthreading is not completed, tape protection operation is done and this message is displayed.	Detected when threading or unthreading is not completed within ten seconds after it is started.
0A	THREADING TROUBLE	When threading cannot be done, tape protection operation is done and this message is displayed.	Detected when the FG frequency at a take-up reel cannot be detected during threading or the tape beginning sensor is activated after the short FF mode is automatically entered three times.
10	H U M I D	Displayed when humid condensation is detected.	Detected using a condensation sensor.
11	TAPE BEGINNING/END SENSOR	Displayed when the tape beginning and end sensor operation is defective.	Detected when the tape beginning and end are detected at the same time.
12	TAPE BEGINNING SENSOR TROUBLE	Displayed when the tape beginning sensor operation is defective.	Detected when the tape beginning continues for more than seven seconds.
13	TAPE END SENSOR TROUBLE	Displayed when the tape end sensor operation is defective.	Detected when the tape end continues for more than seven seconds.

Code	Error message	Description	Detection
14	FAN MOTOR TROUBLE	Displayed when the operation of the fan motor on the connector panel is defective.	Detected according to the period of a ripple noise at the fan motor terminal.
20	C A S S E T T E C O M P A R T M E N T M O T O R L O C K	When cassette up/down operation is not completed, tape protection is done and this message is displayed.	Detected when cassette up/down operation is not completed within four seconds after it is started.
21	REEL TABLE MOTOR LOCK TROUBLE	When driving of L to S or S to L in the reel table is not completed, tape protection operation is done and this message is displayed.	Detected when reel table driving is not completed within four seconds after it is started.
22	REEL TABLE SENSOR TROUBLE	Displayed when reel table's L/S position detection sensor operation is defective.	Detected when the large and small positions are detected at the same time.
23	THREADING RING SENSOR TROUBLE	Displayed when defects occur in the threading ring's position detection.	Displayed when defects occur in the threading ring's position detection.
90	KEY INTERFACE ERROR-1	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the system control to the keyboard.
92	SERVO INTERFACE ERROR-1	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the servo system to the system control.
93	SERVO INTERFACE ERROR-2	Displayed when the interface between the keyboard and system control is defective.	Detected when no interface signal is sent from the system control to the servo system.
94	TC BOARD INTERFACE ERROR	Displayed when the interface between the REC timing control microcomputer and system control on the TC-40 and TC-40P boards is defective.	Detected when the interface signal sent from the REC timing control microprocessor to the system control is defective.
95	SY CPU INTERFACE ERROR	Displayed when the interface between CPU1 and CPU2 on the SY-61 board is defective.	Detected when data is not receive or sent properly between CPU1 and CPU2 during power on sequence.
96	NV-RAM TROUBLE	Displayed when a defective NV-RAM is detected on the SY-61 board.	Detected by the NV-RAM data's checksum.







ERROR-03  
REEL TROUBLE-3

Is tape broken?

YES

Cassette tape defect.

NO

Is cassette  
Compartment's dowel  
properly set?

YES

Reinstall.

NO

Check T reel  
FG duty adjustment.  
(10-4)

NG

Is T reel FG Duty  
adjustment possible?  
(10-4)

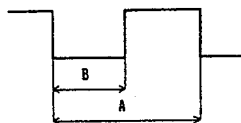
NO

YES

Section 10-4  
T Reel FG Duty Readjustment

After section 6-1-5 Reel Rotation  
Device Gap Adjustment is completed,  
make Section 10-4 T Reel FG Duty  
Readjustment.

OK



Duty cycle (B/A) = 50 ± 5%

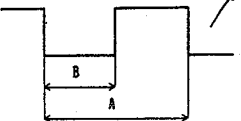
Check Capstan  
FG Duty Adjustment.  
(10-7)

NG

Section 10-7

Capstan FG Duty Readjustment

OK



Duty cycle (B/A) = 50 ± 5%

Is tape normally  
run in F.FWD and  
REW modes?

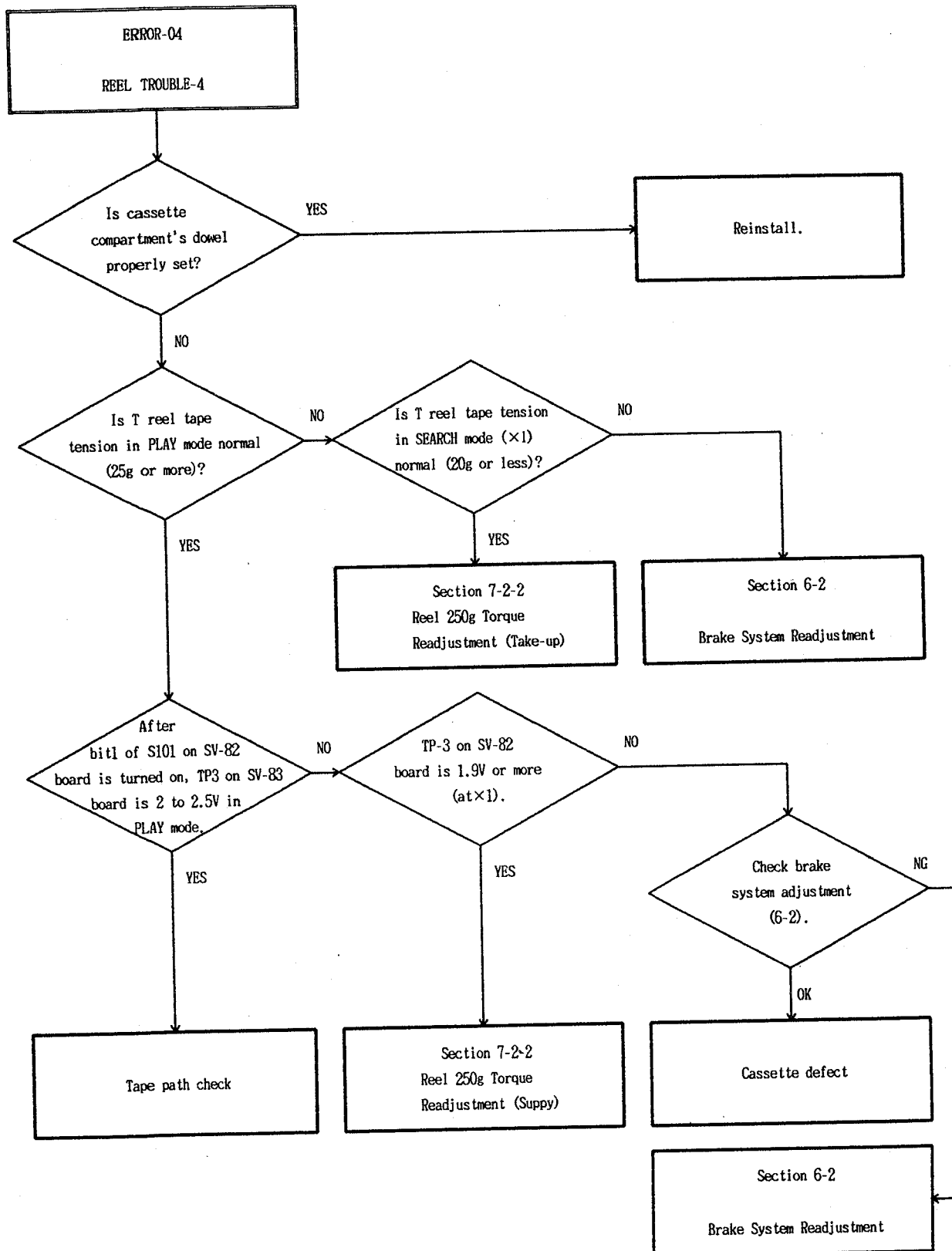
NO

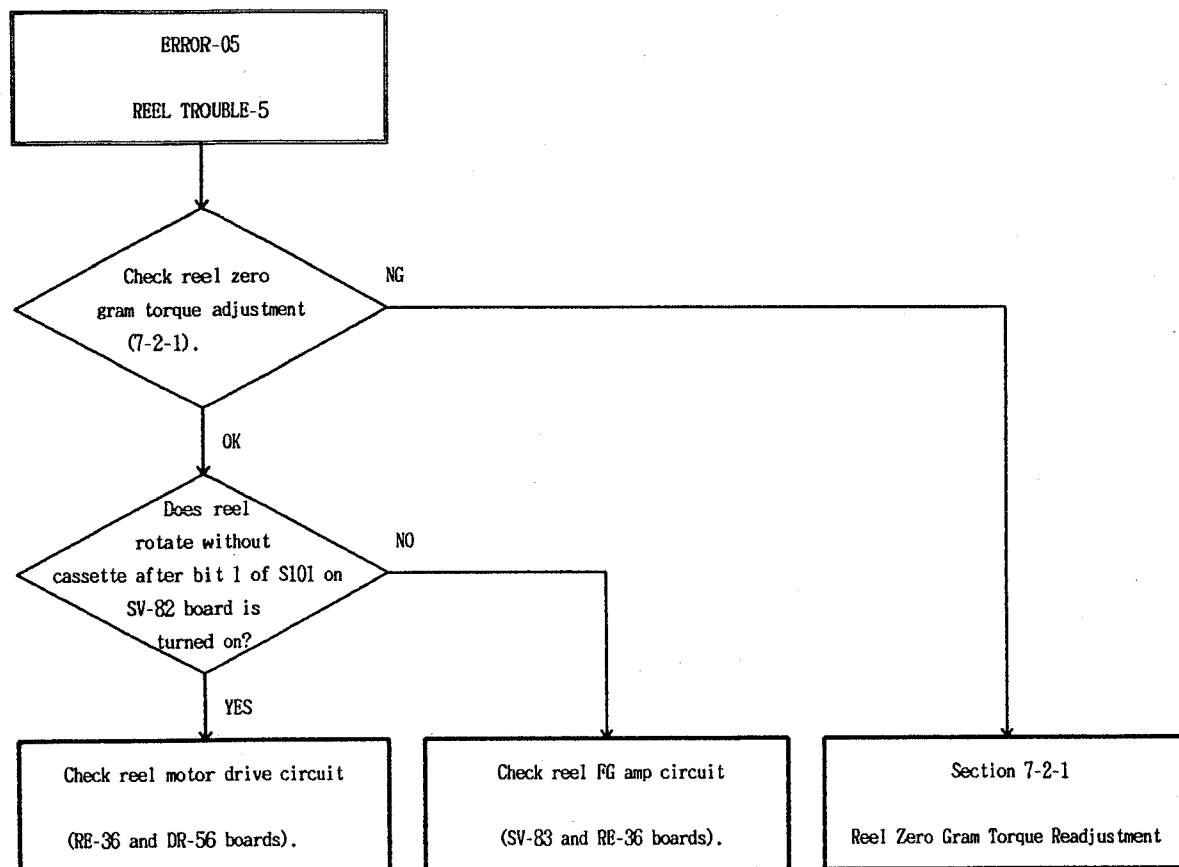
YES

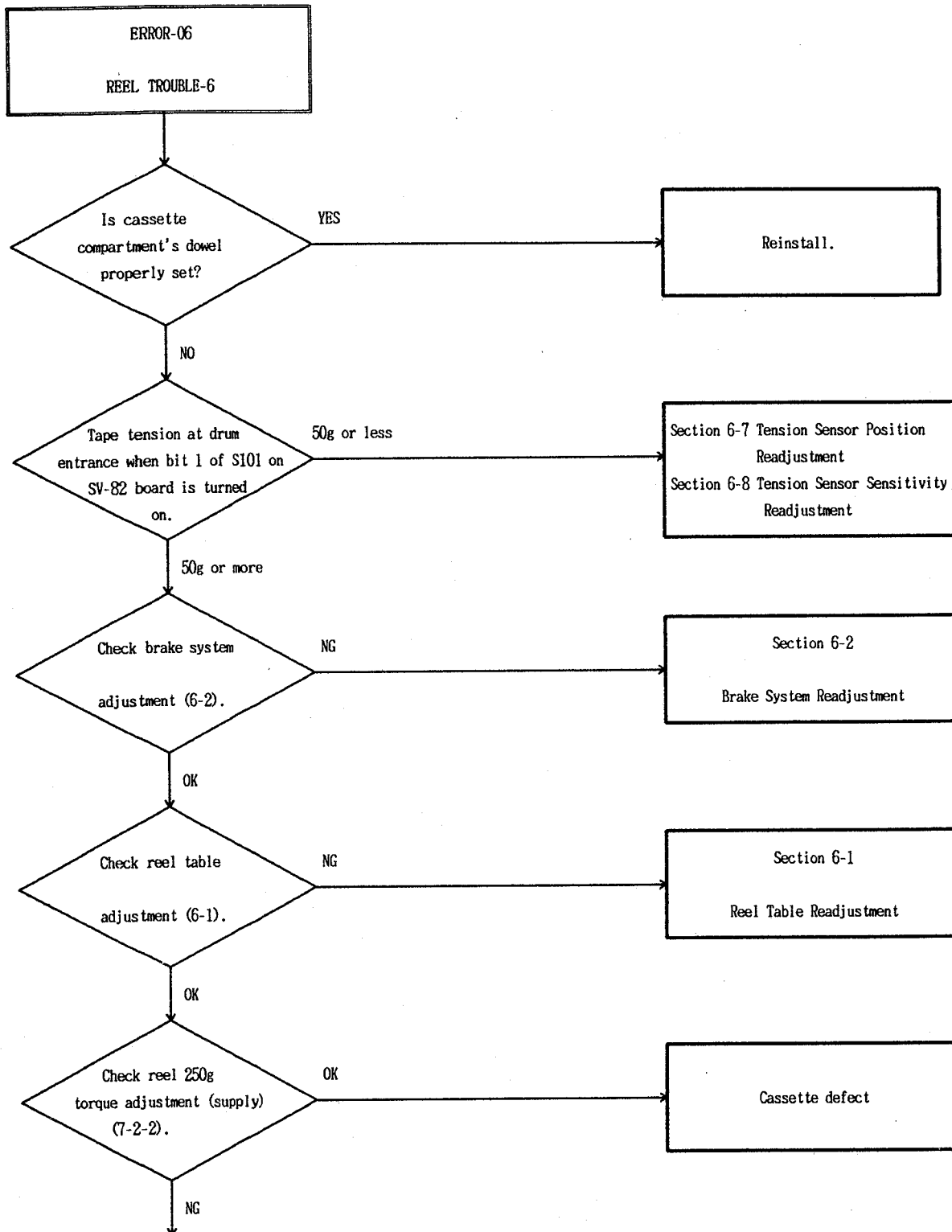
①Section 10-5 Tension Sensor  
Impressed Voltage Readjustment  
②Section 10-6 Tension Sensor Amp  
Offset Readjustment  
③Section 6-3-1 Tension Regulator Arm  
Position Readjustment

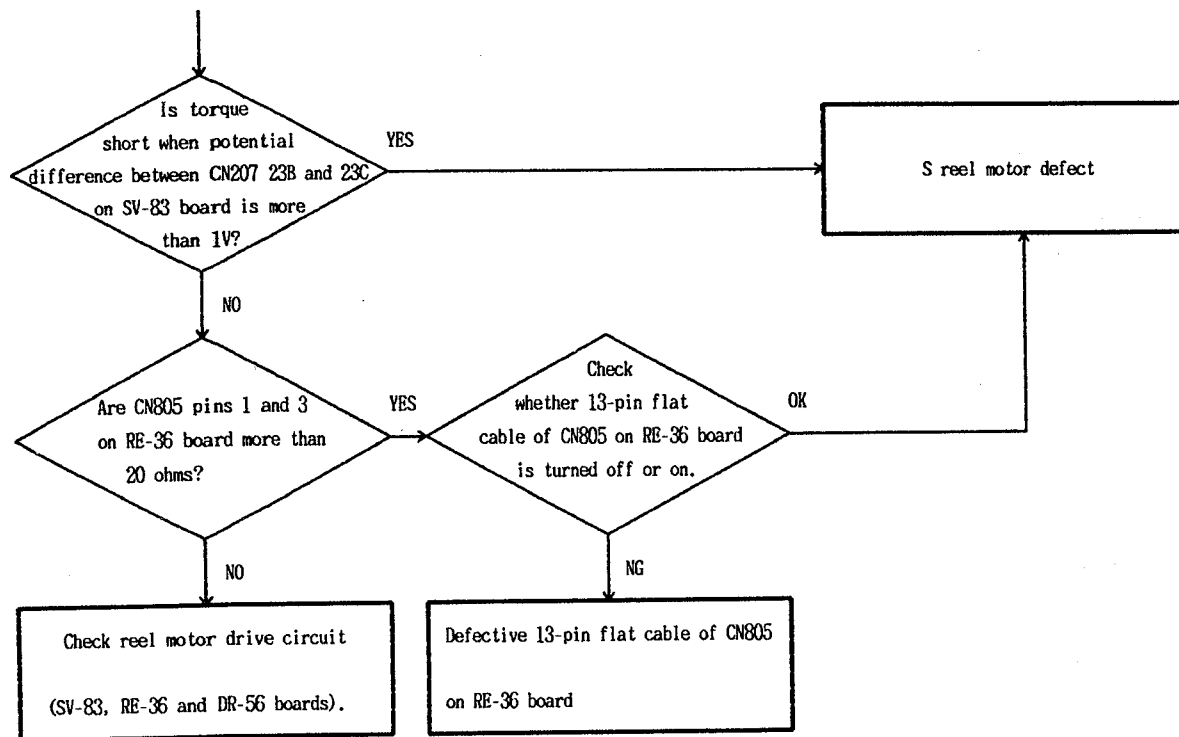
①Reel motor drive circuit (SV-83,  
RE-36, and DR-56 boards) check  
②Section 6-1 Reel Table Readjustment  
③Section 6-2 Brake System Readjustment  
④Section 7-2 Reel Torque Readjustment  
⑤Reel motor defect  
⑥Cassette defect

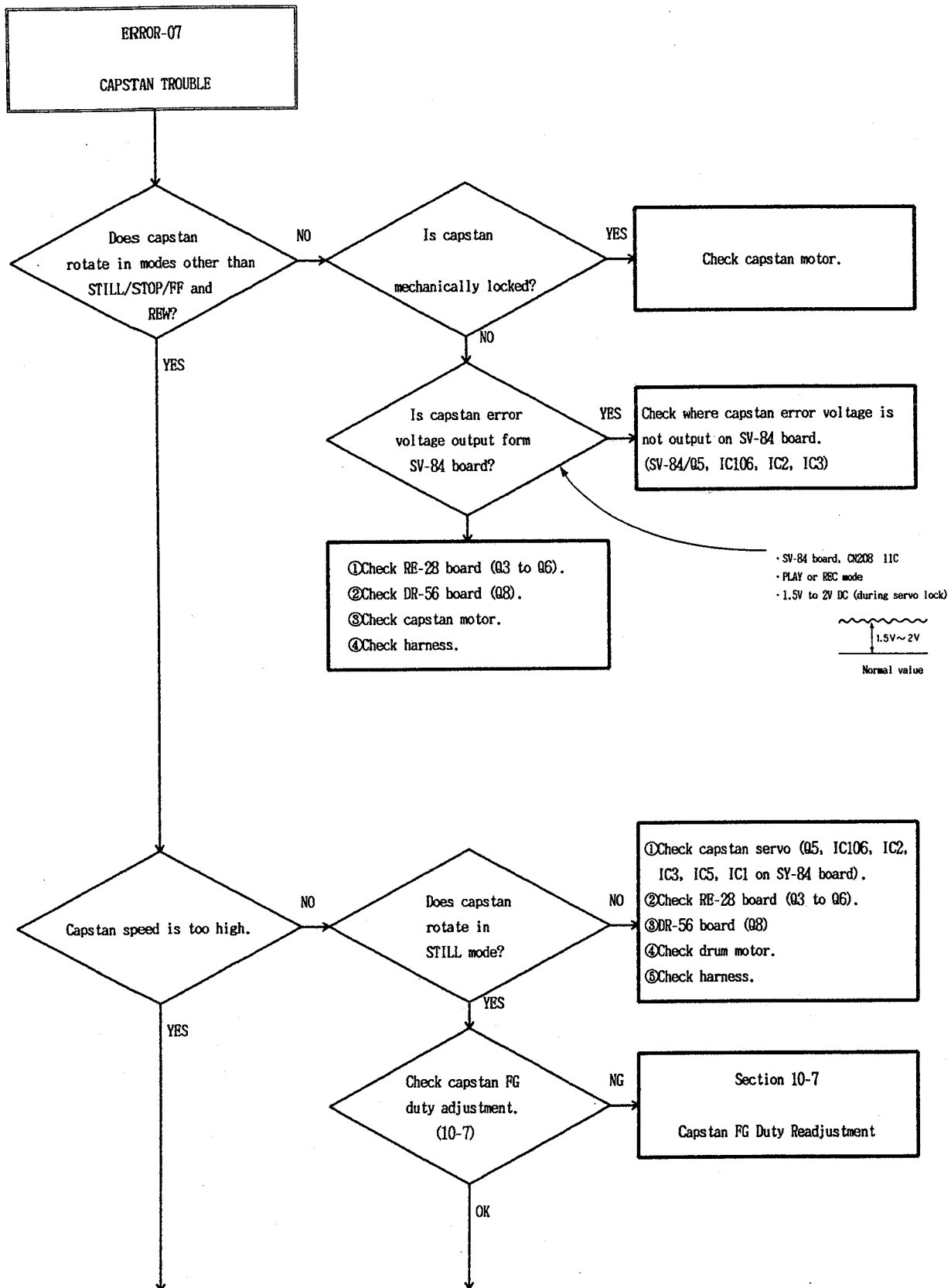


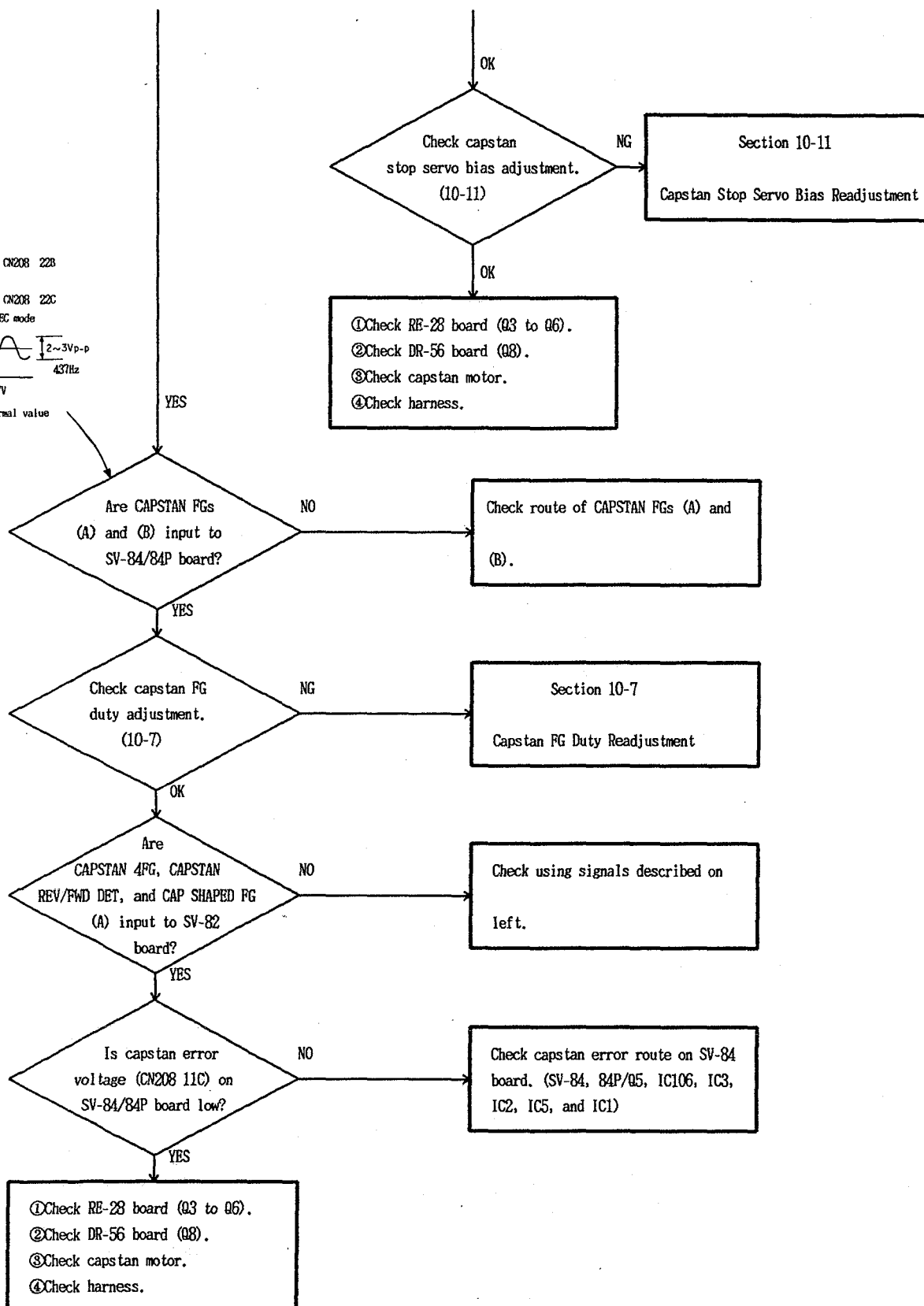
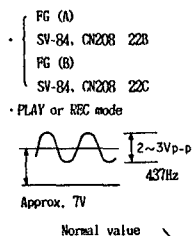


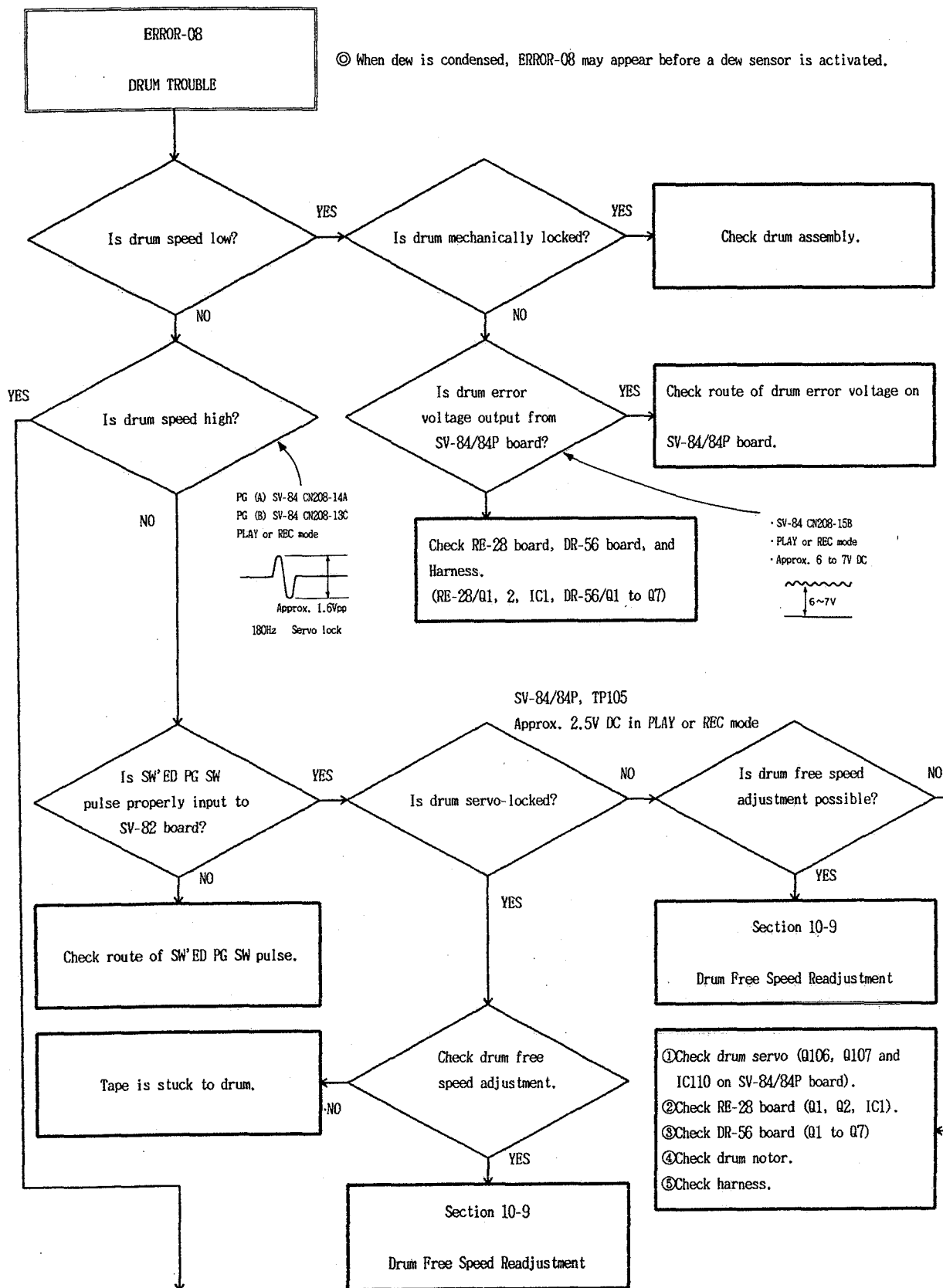


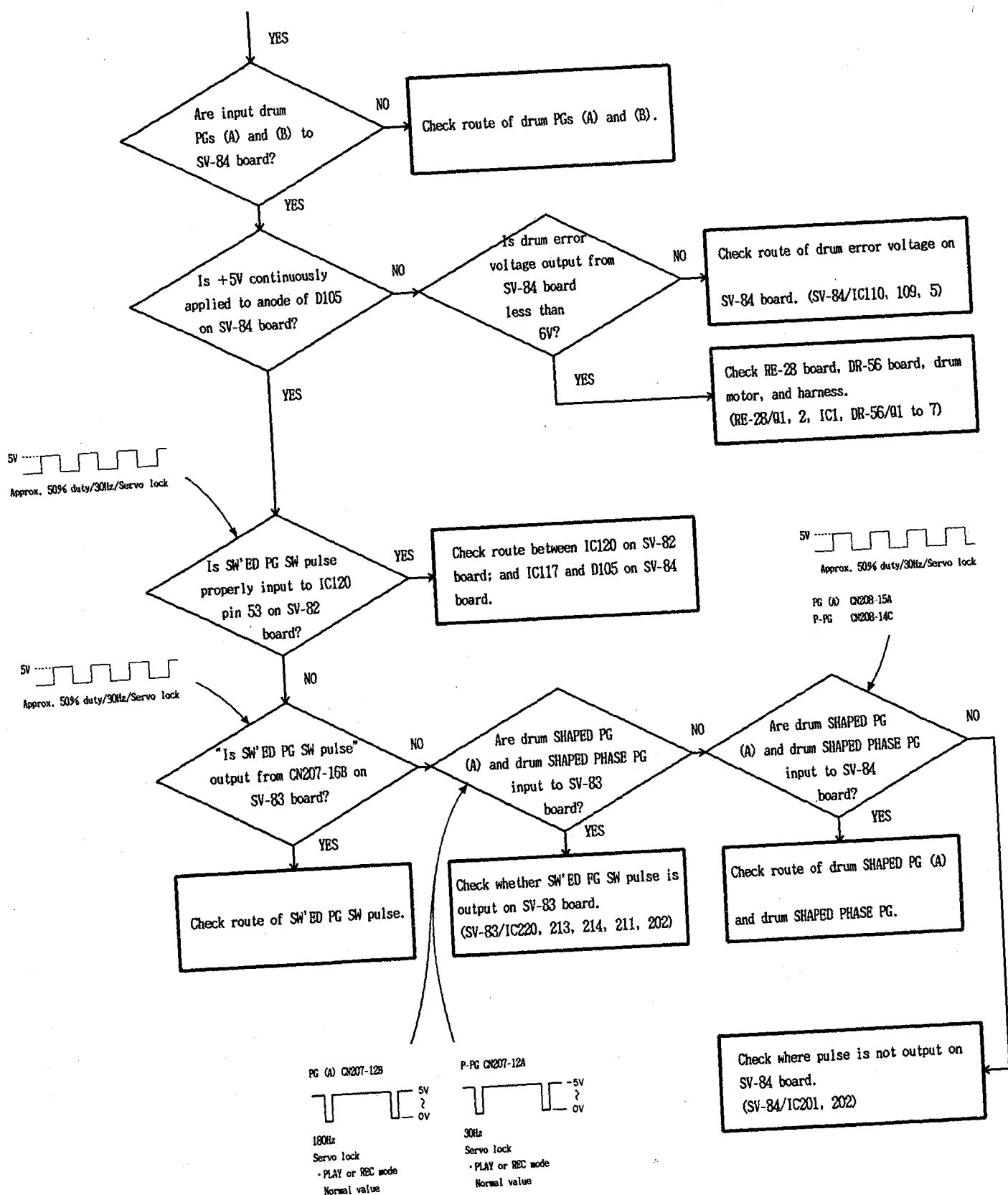




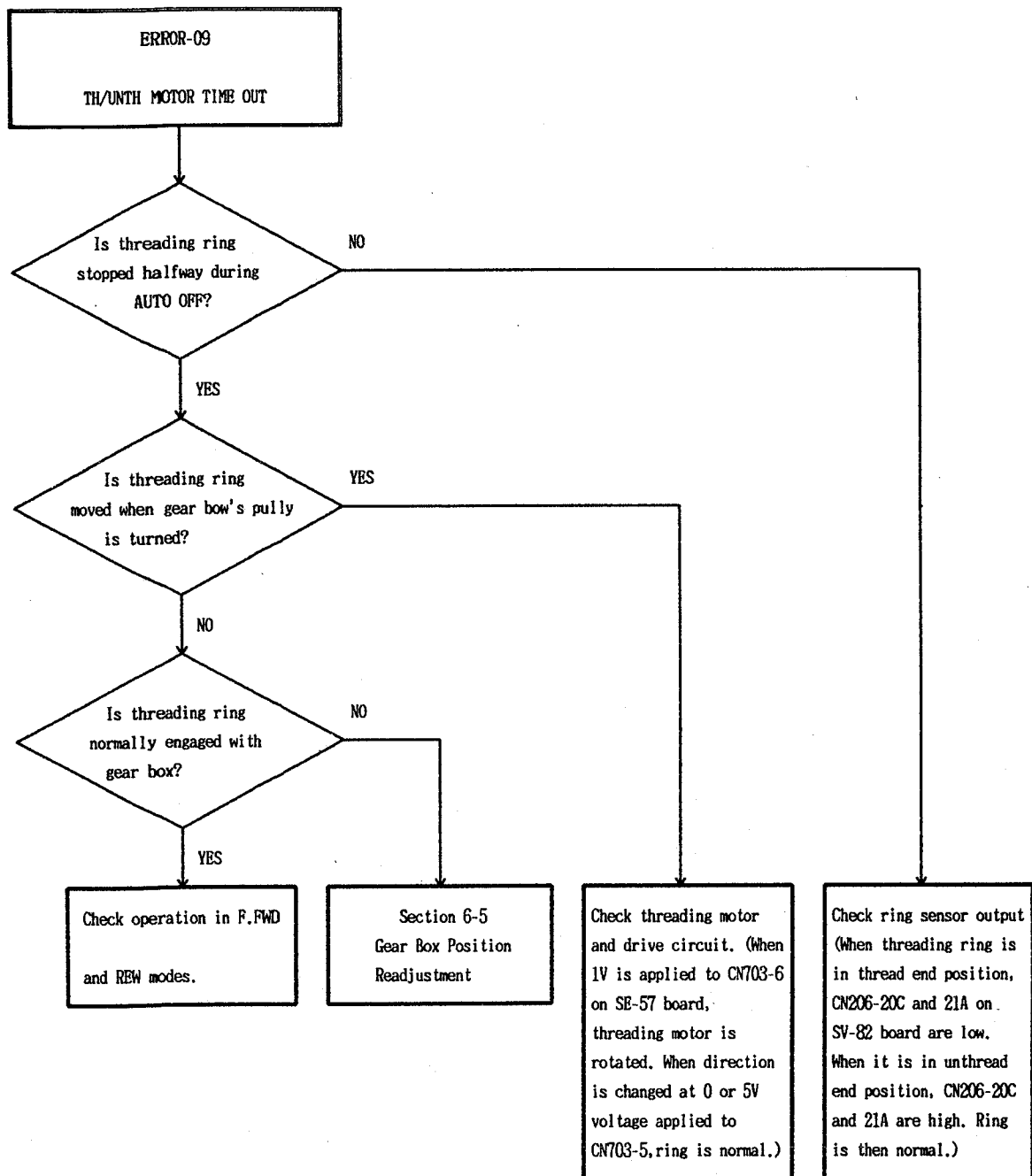


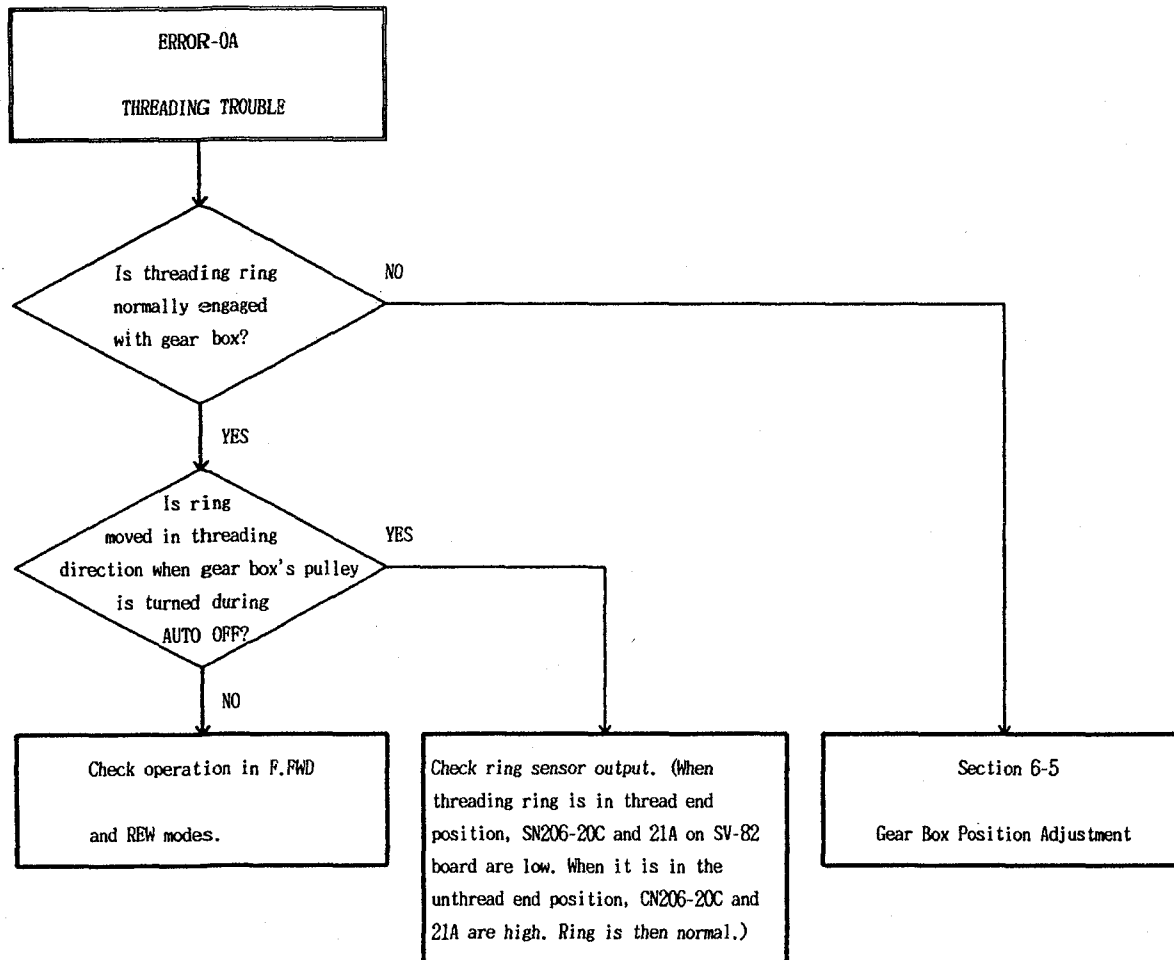


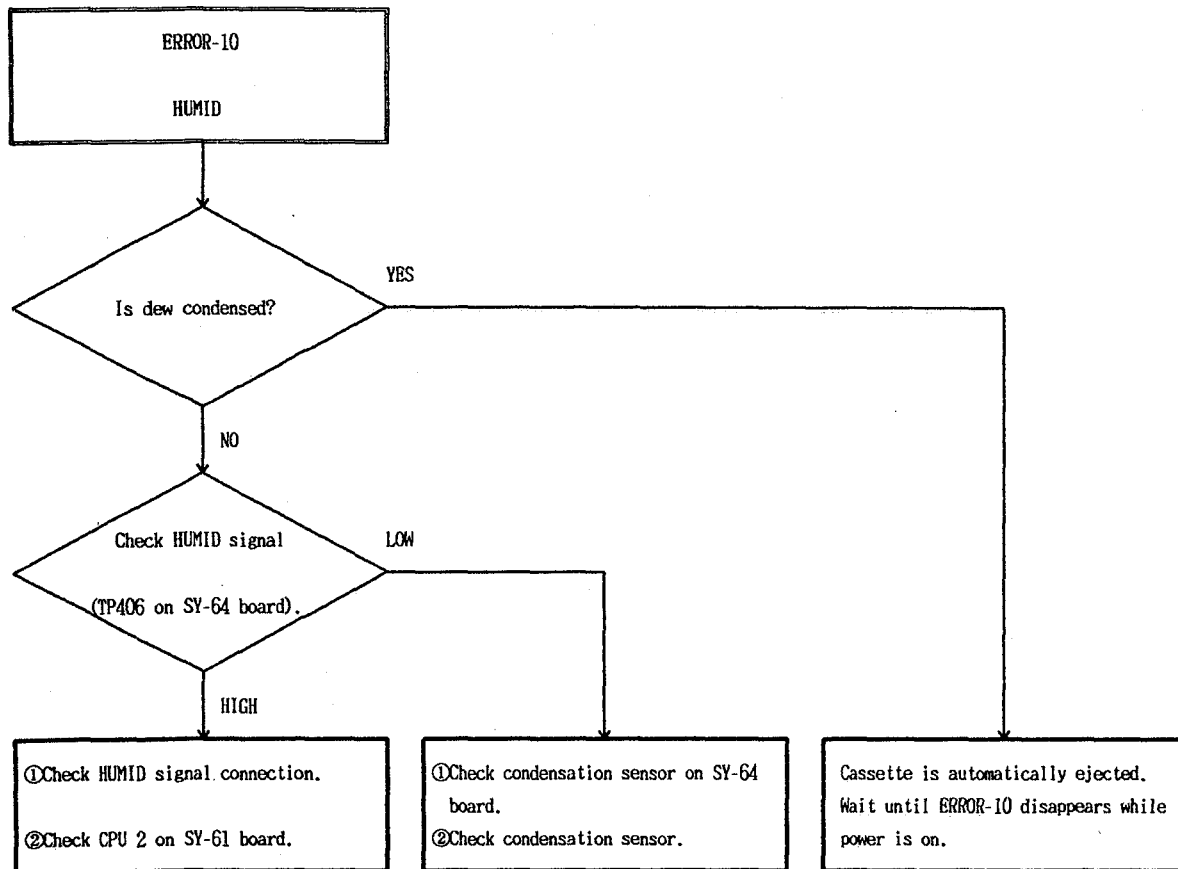




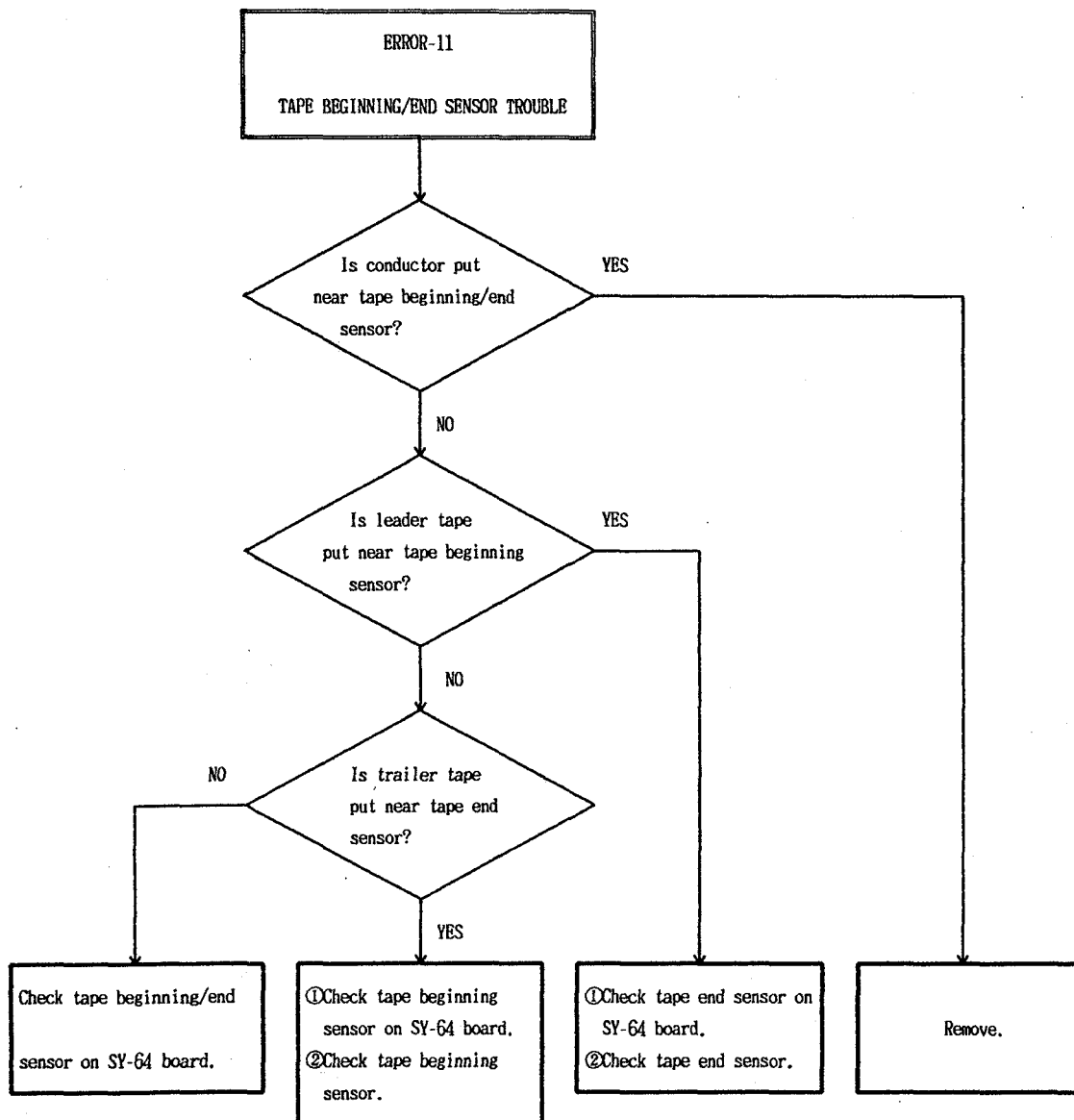


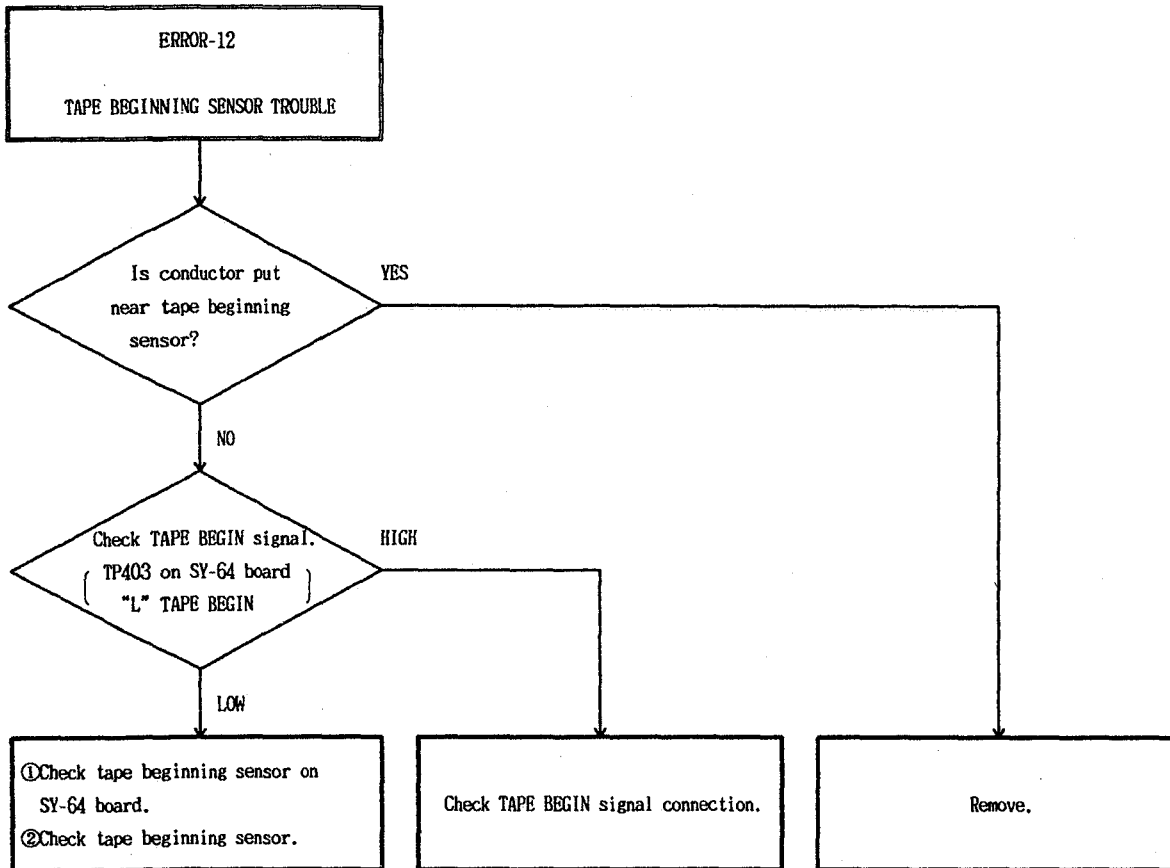


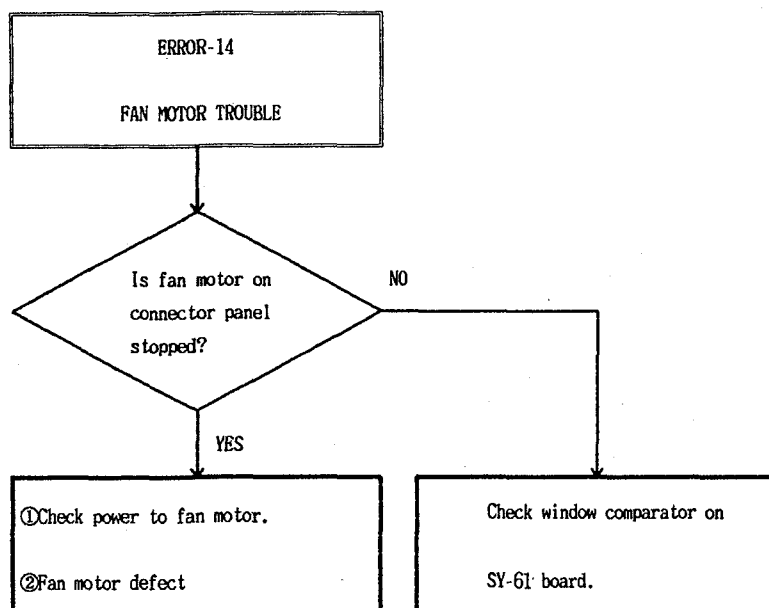
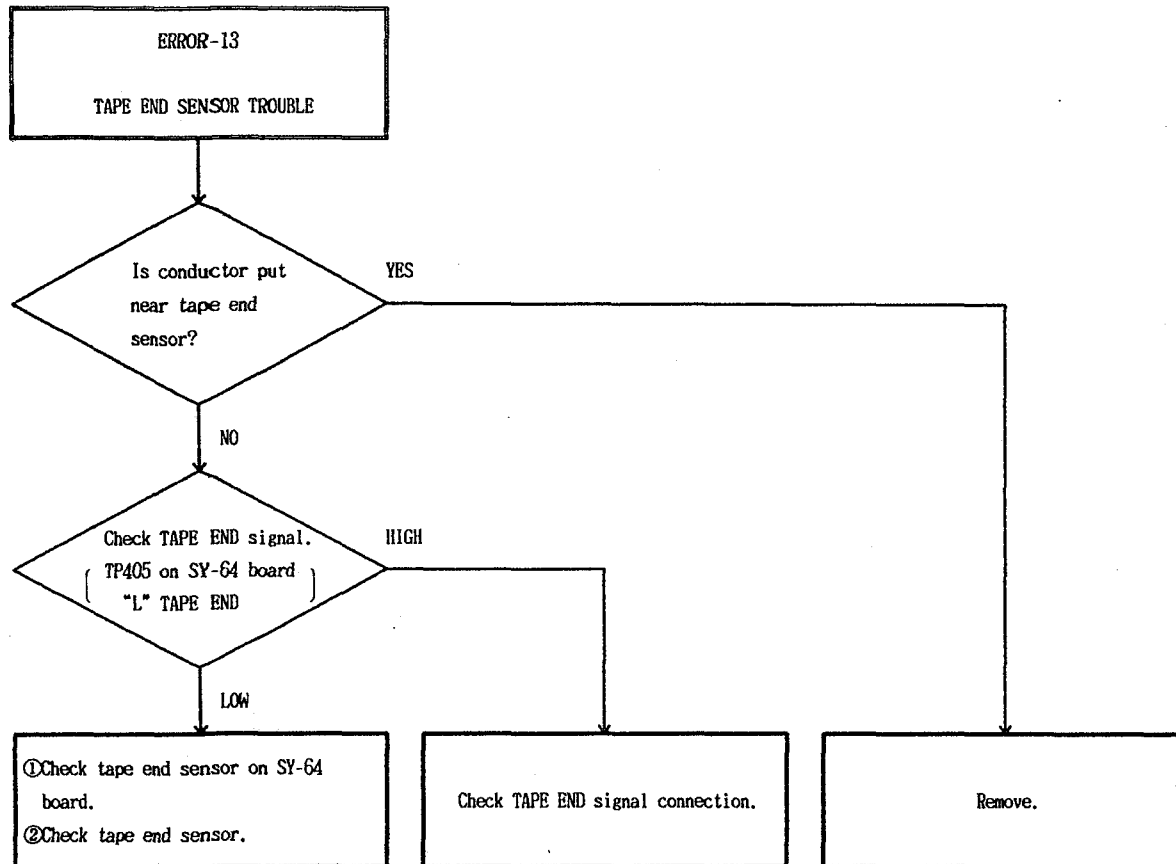




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ERROR-20  
CASSETTE COMPARTMENT MOTOR LOCK

NO  
Is cassette compartment activated?

YES

\* Is drive voltage supplied to motor?

YES

NO

Is CASSETTE COMPARTMENT EXIST signal low (CN331-3 on CL-14 board)?

NO

YES

Is CASSETTE DOWN 1 or 2 switch normal?

NO

YES

Check motor drive circuit (IC31 and peripherals on SY-64 board).

Check cassette down 1 or 2 sensor.

Check "L" CASSETTE COMPARTMENT EXIST signal.

Mechanism check  
①\*Motor joint runs idle.  
②Guide roller is worn or rotated heavily.  
③Motor defect

\* Motor drive voltage (10 to 14V)

The motor drive voltage is supplied for four seconds during cassette up/down operation. When the cassette compartment moving is not completed within four seconds, the voltage supply is stopped. When check cannot be make within this time, enter the CASSETTE UP/DOWN mode again after the SYSTEM RESET switch on the SY-61 board is pressed or power or is turned on again.

SY-64 board

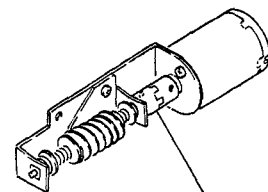
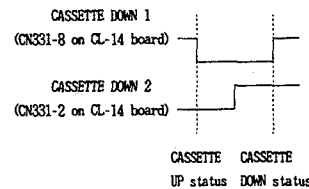
CL-14 board

CASSETTE DOWN at TP2 or

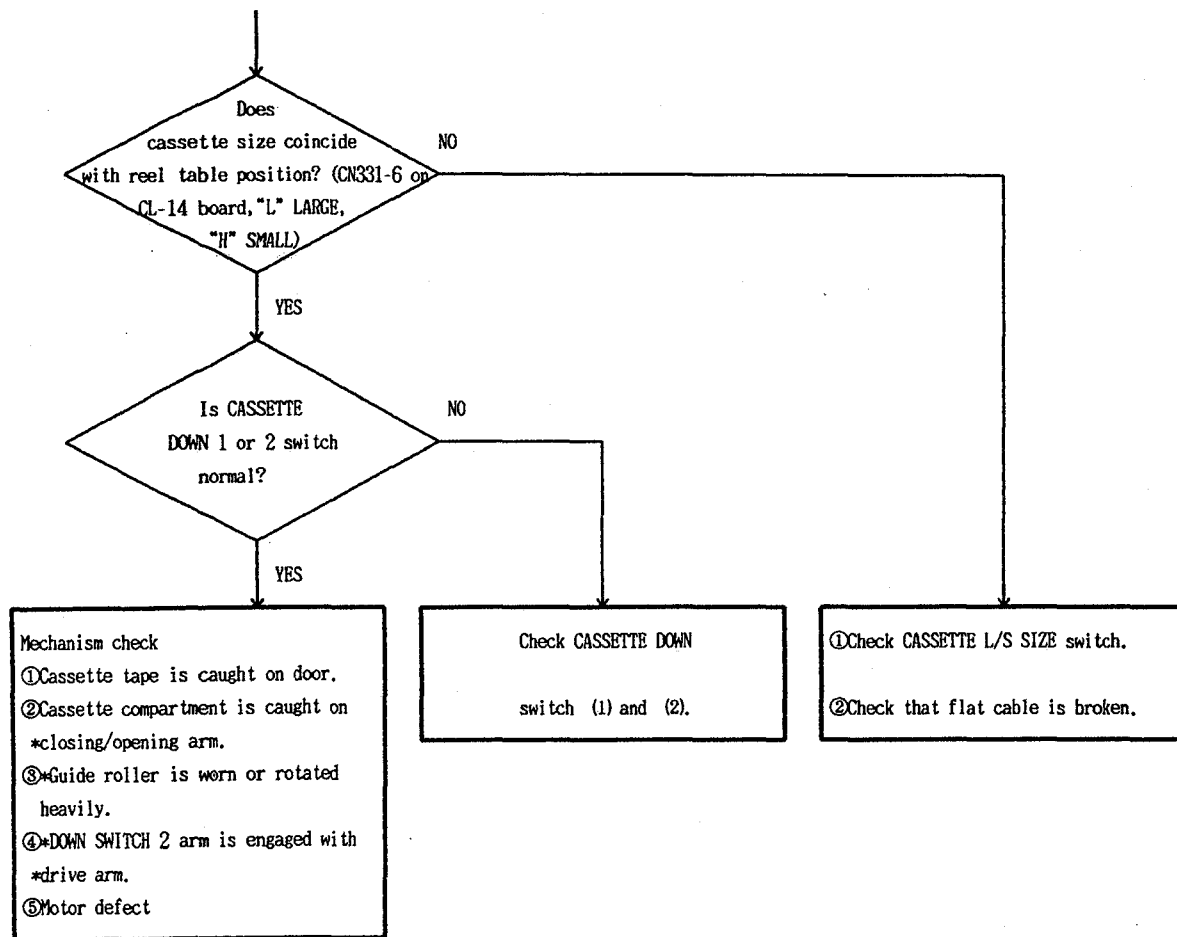
CN331-10 CASSETTE DOWN

CASSETTE UP at TP3

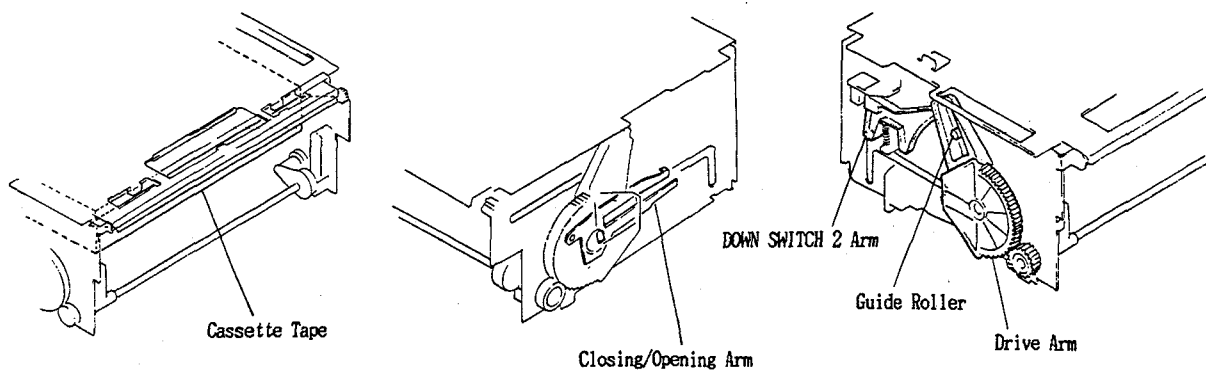
CN331-11 CASSETTE UP



\*Motor joint

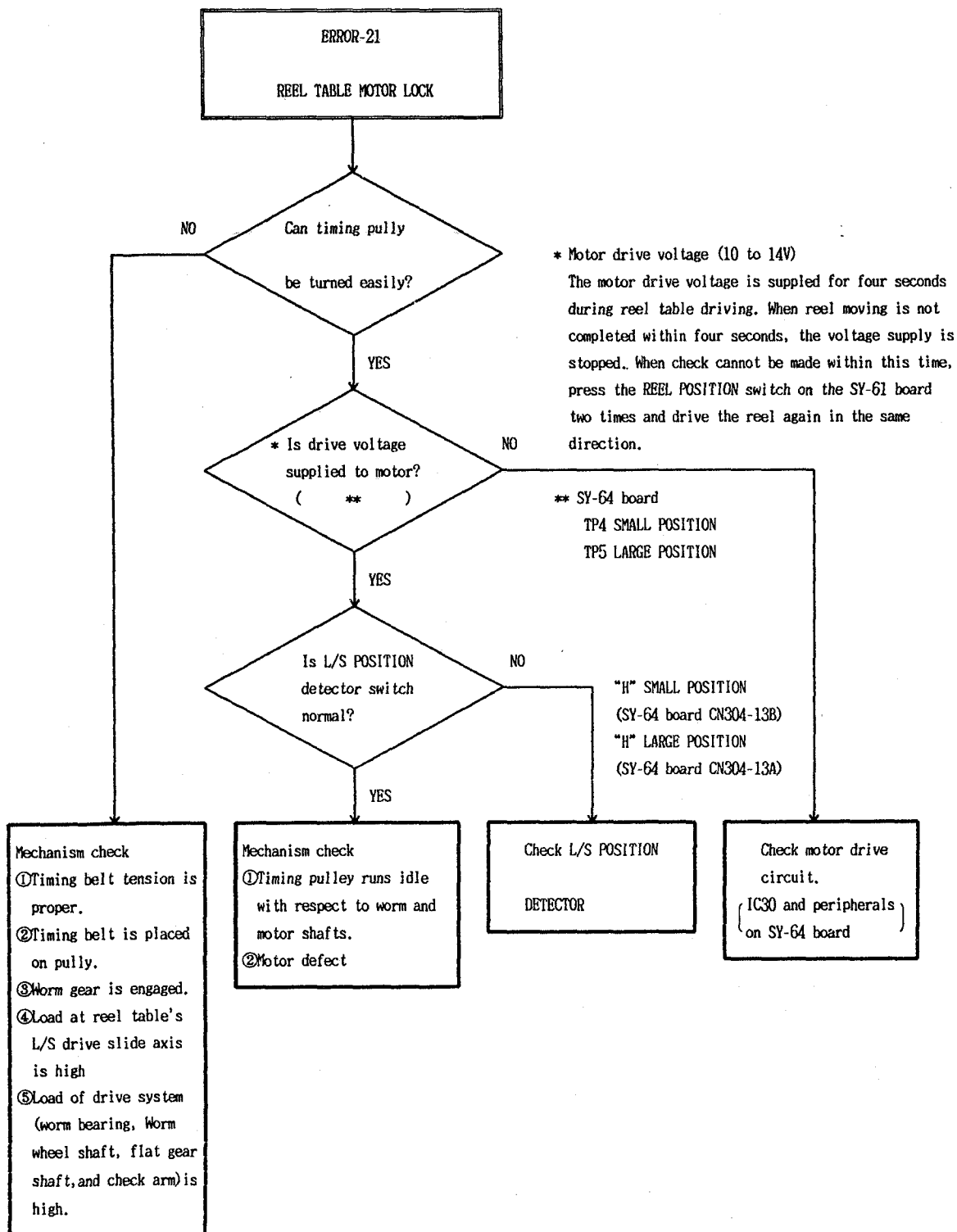


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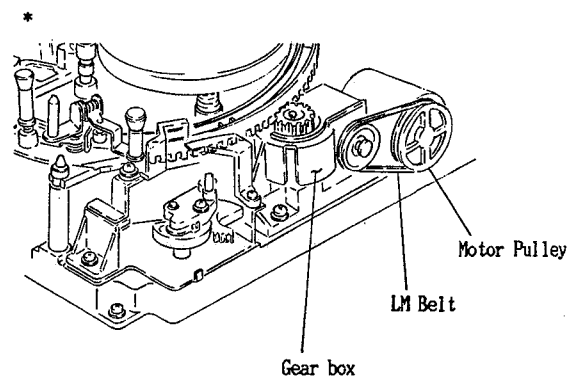
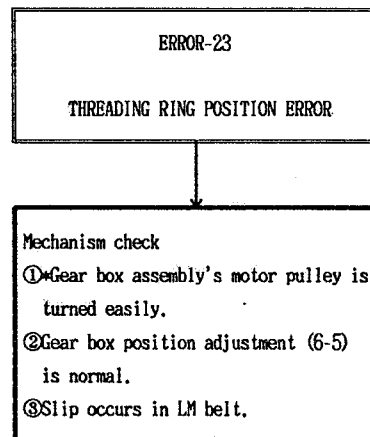
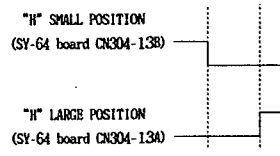
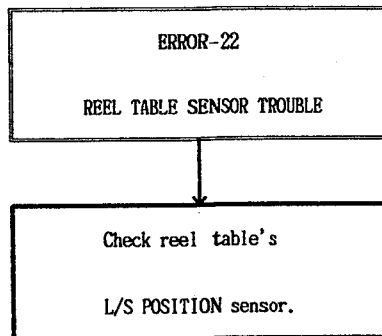


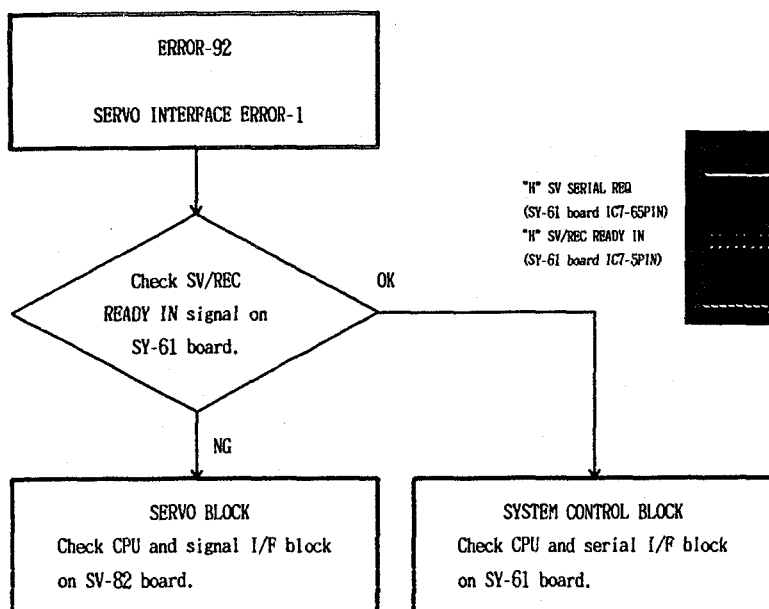
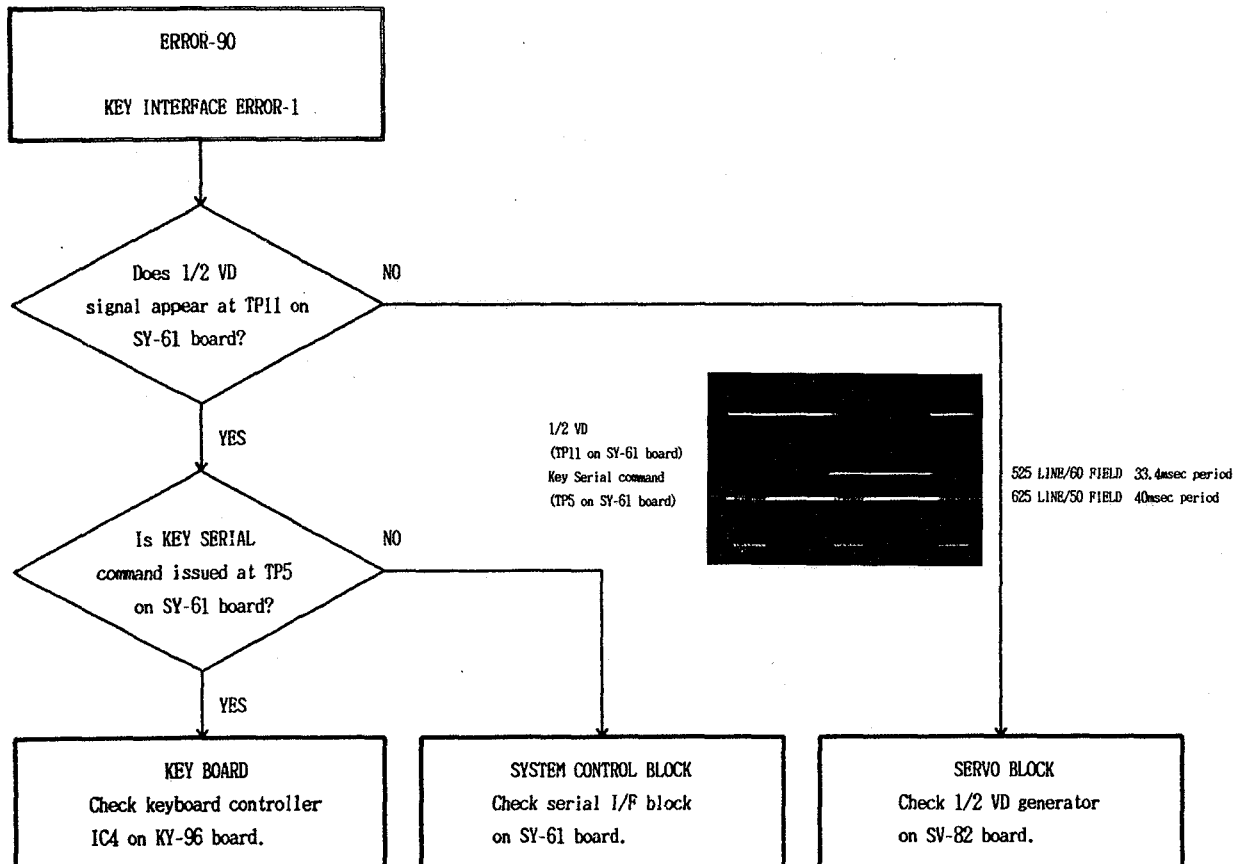


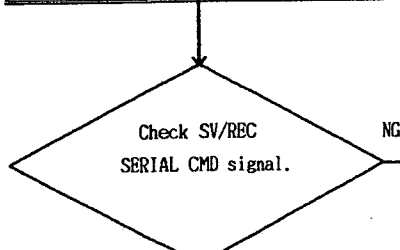
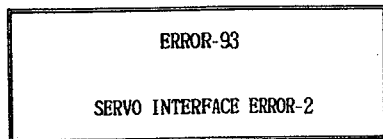
- When this error occurs, remove and check the cassette compartment.
- When the cassette compartment is removed, the EJECT button is pressed, and the REEL POSITION switch on the SY-61 board is pressed in UNTHREAD END mode, the reel position can be selected at random.



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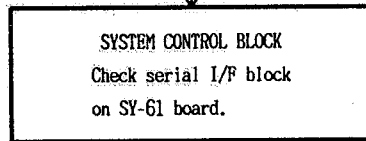
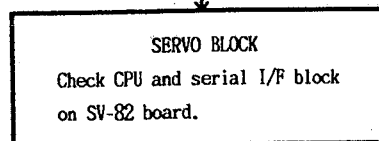




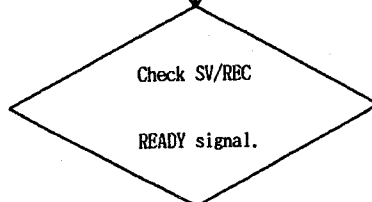
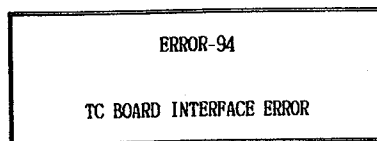
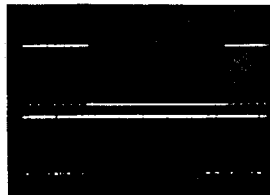


NG

OK

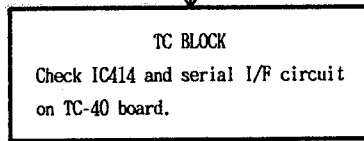
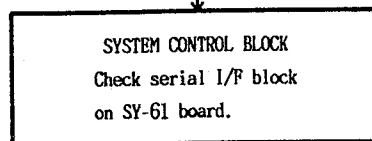


"H" SV SERIAL REQ  
(SY-61 board IC7-65PIN)  
SV/REC SERIAL CMD  
(SY-61 board CN302-1C)

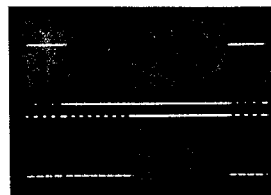


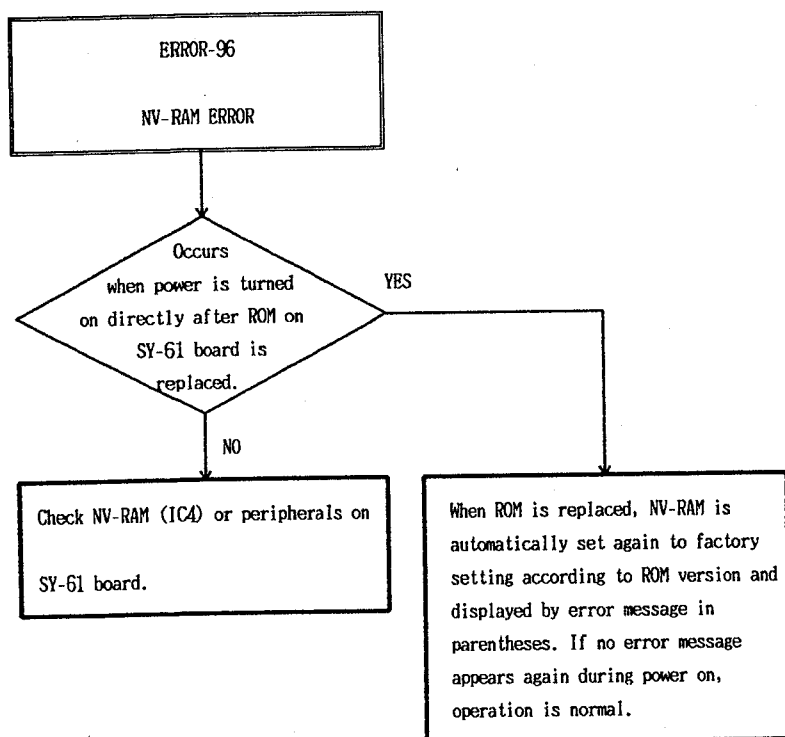
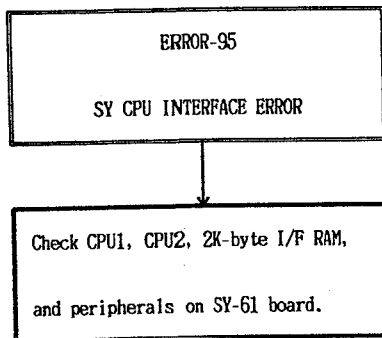
NG

OK



"H" REC SERIAL REQ  
(SY-61 board IC7-68PIN)  
"H" SV/REC READY IN  
(SY-61 board IC7-5PIN)







## SECTION 3

### PERIODIC CHECK AND MAINTENANCE

#### 3-1. SYSTEM CONTROL OPERATION CHECK

##### 3-1-1. Playback, F.FWD, REW, SHUTTLE, JOG, and Preroll Function Checks

The following should be checked daily before operation.

The check procedure described here is primarily for the BVW-75P but can also be applied to operating the remote control unit.

Note that the switches must be set according to how the machine is used after the checks.

- . Thread a recorded tape (Video, Audio CH-1/CH-2/CH-3/CH-4). (Do not use an alignment tape.)
- . Connect a video/audio monitor.
- . Internal switch setting: The following are the procedures when Item 101 is set to DATA No. 1 in the system setup. When it is set to DATA No. 0, the procedure indicated within the double line need not be performed.

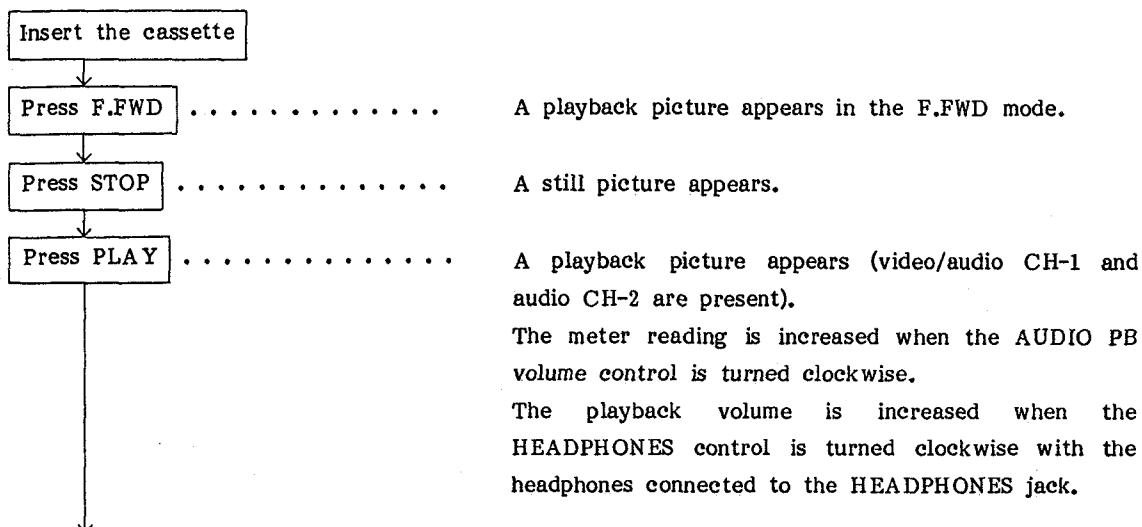
(Refer to Sec. 1-7 for further details.)

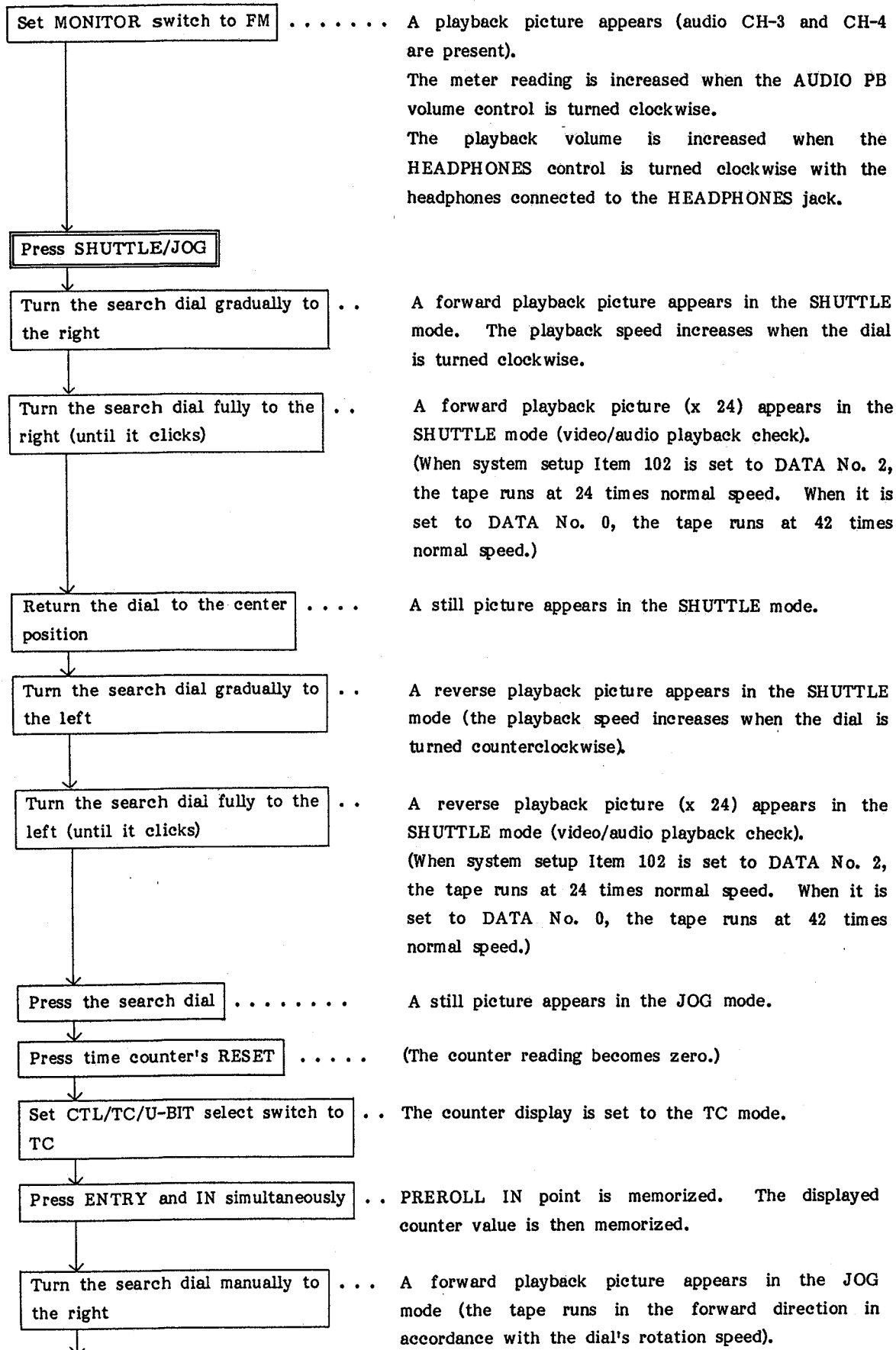
- . Select switch setting;
 

POWER	: ON
REMOTE/LOCAL	: LOCAL
PB.PB/EE	: PB
AUDIO MONITOR	: ST/MIX
MONITOR	: LNG
CTL/TC/U-BIT	: CTL
TRACKING	: FIX
DT SELECT	: OFF
SHUTTLE/JOG	: SHUTTLE

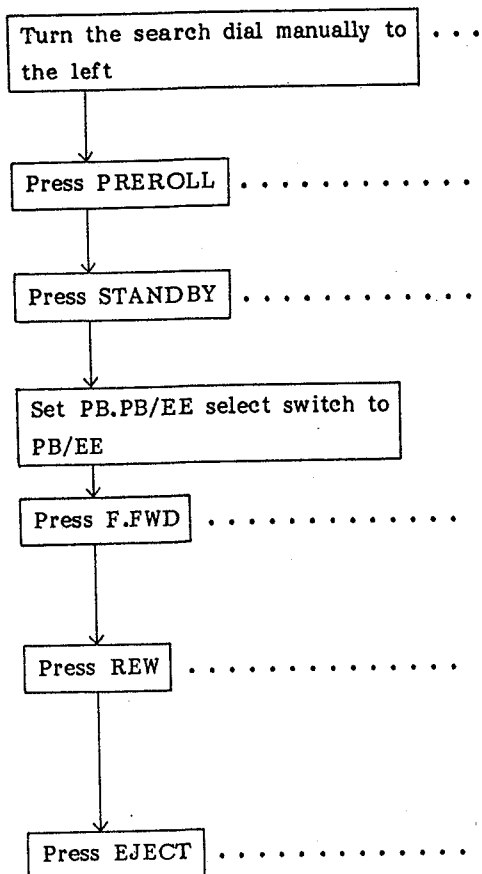
#### Action

#### Check that









A reverse playback picture appears in the JOG mode (the tape runs in the reverse direction in accordance with the dial's rotation speed).

The tape automatically stops prior to the time (i.e., IN point) selected by system setup Item 001.

The STANDBY lamp goes off.  
Only noise appears on the monitor.

The E-to-E mode picture appears on the monitor only when system setup Item 108 is set to DATA No. 0.

The tape rewinds (the E-to-E mode picture appears on the monitor only when system setup Item 108 is set to DATA No. 0). The tape stops automatically at the beginning of the tape.

The cassette is ejected.

### 3-1-2. DT Playback Function Check

The following should be checked daily before operation when the BVW-75P is used as a playback unit in the DT mode.

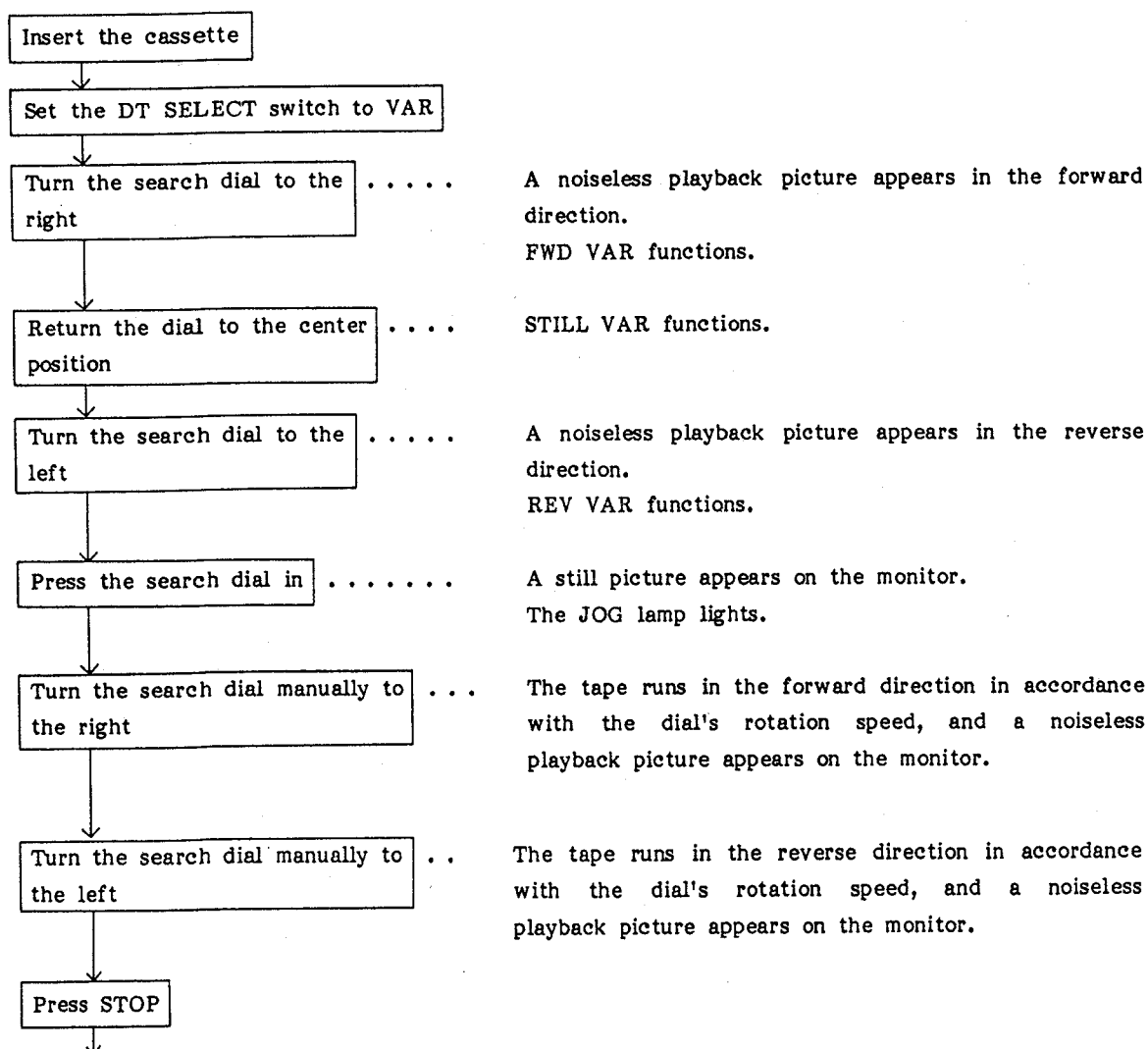
Note that the switches must be set according to how the machine is used after the checks.

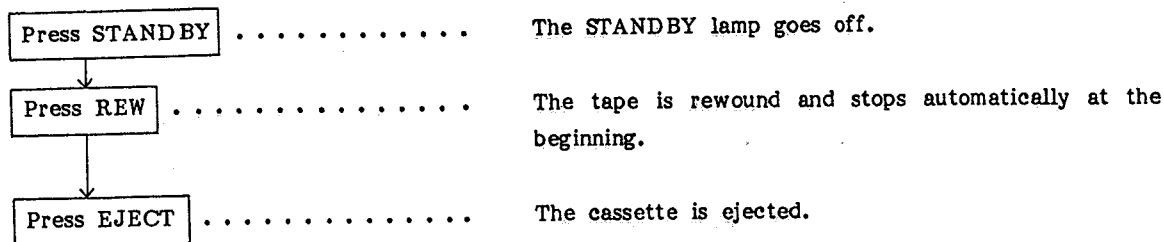
- . Insert a video cassette tape on which a video signal is recorded. (Do not use an alignment tape.)
- . Connect a video monitor.
- . Select switch setting:
 

POWER	: ON
REMOTE/LOCAL	: LOCAL
DT SELECT	: VAR
SHUTTLE/JOE	: SHUTTLE

#### Action

#### Check that





### 3-1-3. Record Function Check

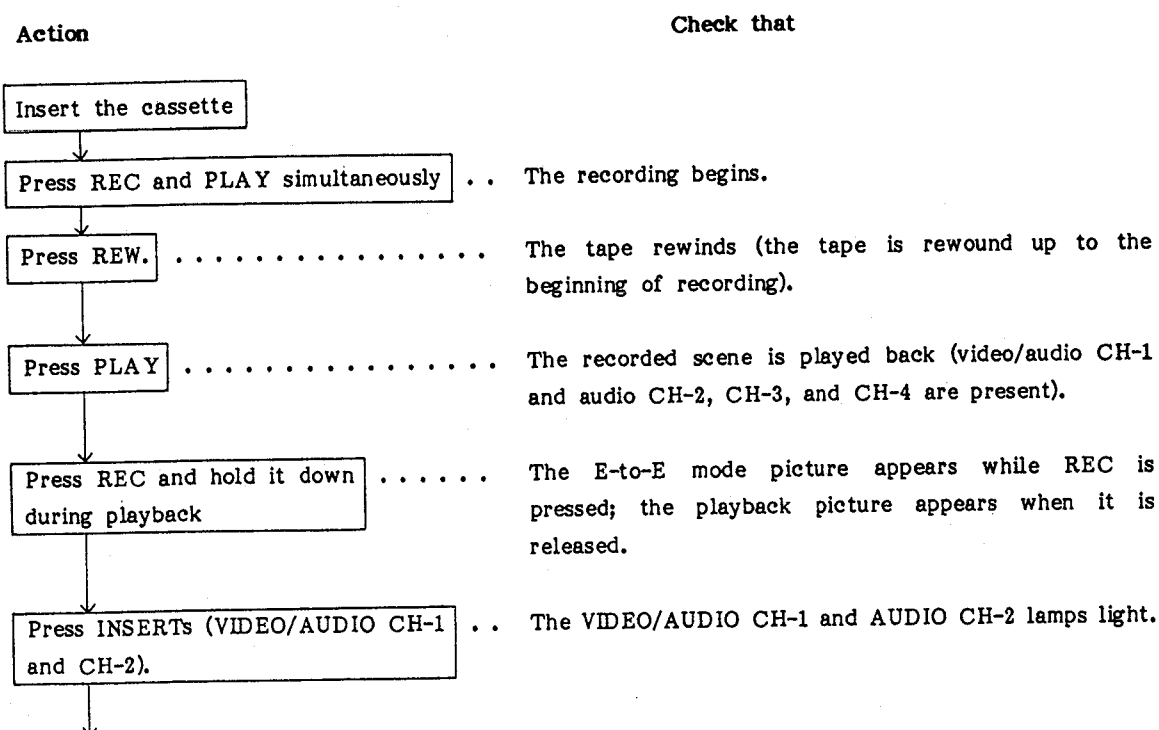
The following should be checked daily before operation when the BVW-75P is used as a recorder only.

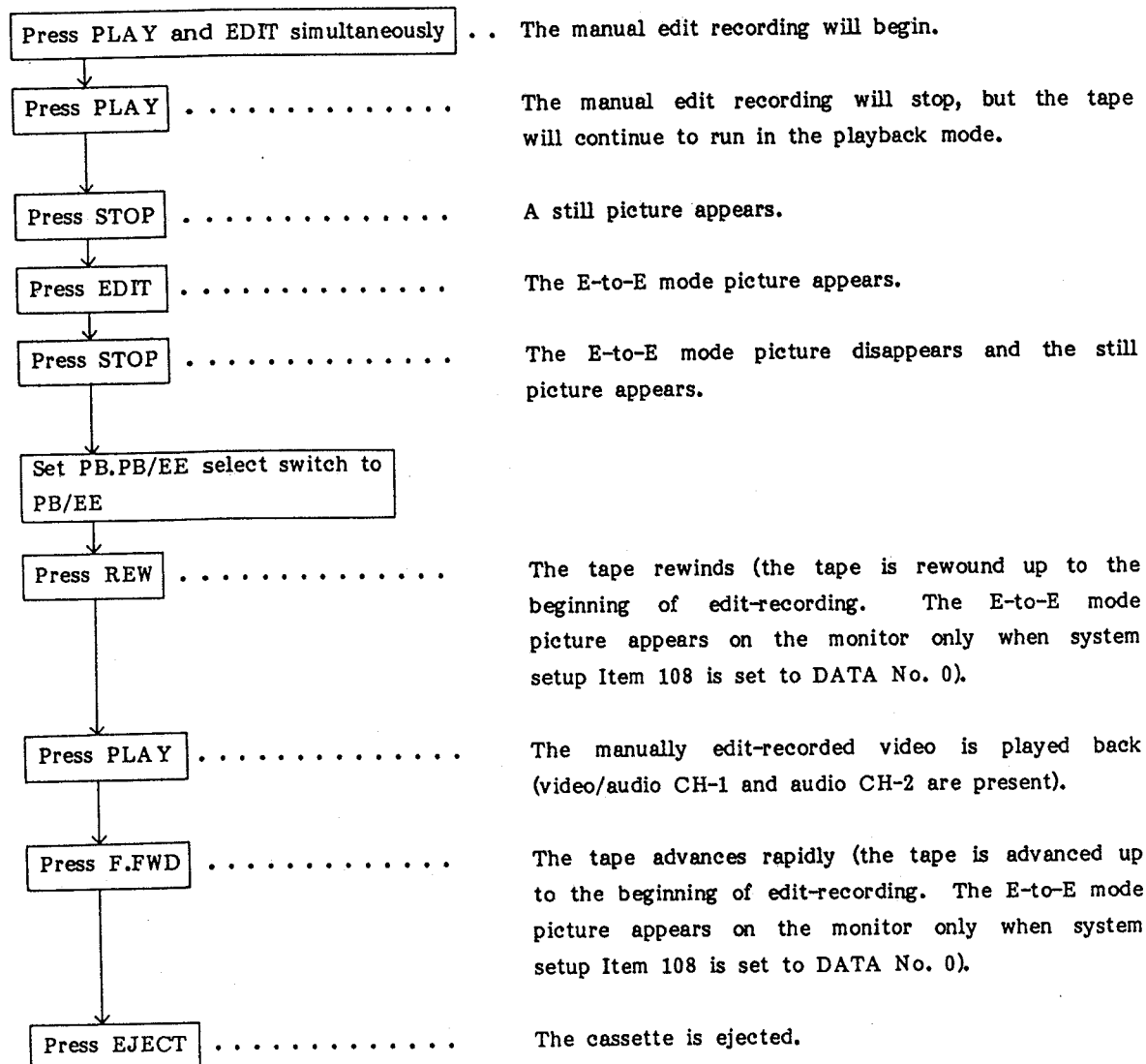
The check procedure described here is primarily for the BVW-75P but can also be applied to operating the remote control unit.

Note that the switches must be set according to how the machine is used after the checks.

- . Insert a video cassette tape on which recording and playback can be made.
- . Connect signals to the VIDEO IN/AUDIO IN CH-1 and AUDIO IN CH-2, CH-3, and CH-4 connectors.
- . Set the INPUT SELECT switch to COMPOSITE.
- . Connect a video/audio monitor.
- . Select switch setting;
 

POWER	:	ON
REMOTE/LOCAL	:	LOCAL
INPUT SELECT	:	COMPOSITE
PB.PB/EE	:	PB





### 3-1-4. Editing Function Check

The following (including Sec. 3-1-1) should be checked daily before operation when the BVW-75P is used as an editing machine.

The check procedure described here is primarily for the BVW-75P but can also be applied to operating the remote control unit.

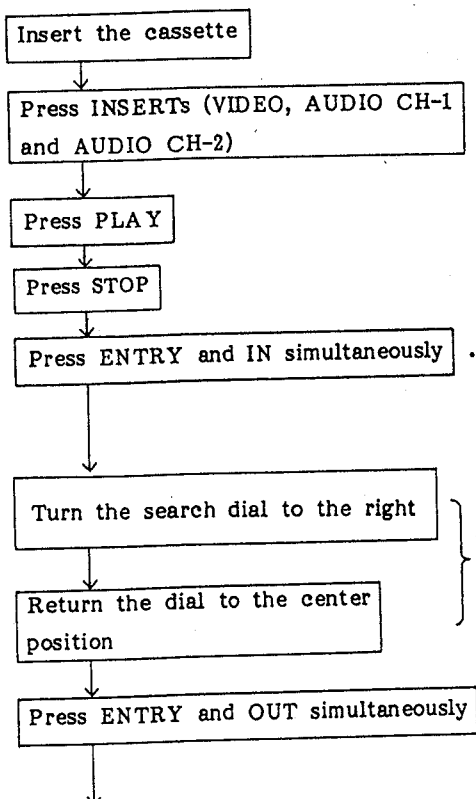
Note that the switches must be set according to how the machine is used after the checks.

- . Thread a recorded tape (Video, Audio CH-1, CH-2, CH-3, and CH-4). (Do not use an alignment tape.)
- . Connect signals to the VIDEO IN/AUDIO IN CH-1, CH-2, CH-3, and CH-4 connectors (use signals that differ from those recorded on the tape).
- . Set the INPUT SELECT switch to COMPOSITE.
- . Internal switch setting: The following are the procedures when Item 101 is set to DATA No. 1 in the system setup.  
(Refer to Sec. 1-7 for further details.)
- . Select switch setting;

POWER	: ON
REMOTE/LOCAL	: LOCAL
PB.PB/EE	: PB
INPUT SELECT	: COMPOSITE

#### Action

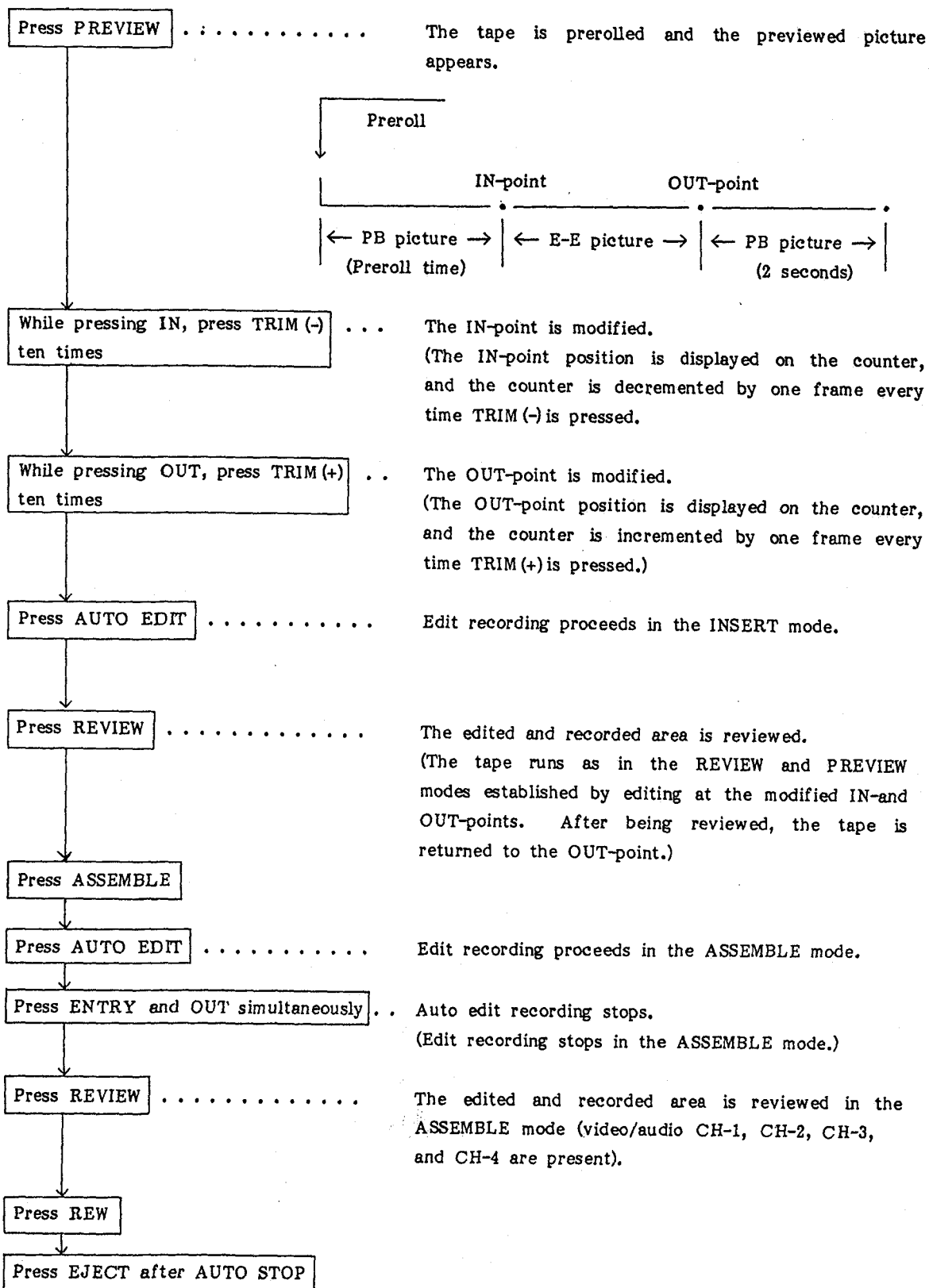
#### Check that



... The IN-point is determined and memorized.  
Note the counter number of the point (EDIT-IN).

The OUT-point is searched.

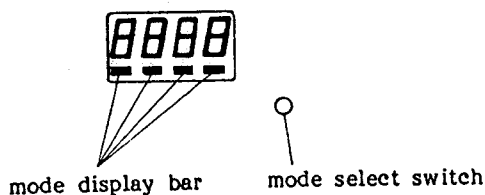
... The OUT-point is determined and memorized.  
Note the counter number of the point (EDIT-OUT).



## 3-2. DIGITAL HOURS METER

### 3-2-1. Outline

When you open the Function Control Panel, a digital hours meter can be seen on the left of the chassis. The hours meter has four display modes. The accumulated elapsed operation time or the number of operations is displayed for every mode. It is recommended to perform the periodic checks and maintenance based on the hours meter.



**Note:** The hours meter, which has a built-in battery, should be replaced every 5 years.

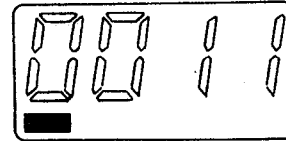
### 3-2-2. Description of the Display Mode

1. T1: OPERATION METER mode
  - Displays accumulated time that the power of the unit has been turned on.
2. T2: DRUM RUNNING METER mode
  - Displays accumulated rotation time of the drum in the THREADING END mode.
3. T3: TAPE RUNNING METER mode
  - Displays accumulated tape running time in the F.FWD REW, PLAY, SEARCH, REC, and EDIT modes (not including the STILL mode).
4. CT: THREADING/UNTHREADING COUNTER mode
  - Displays accumulated number of threading and unthreading operations.

### . T1, T2, and T3

These modes display the accumulated time. The actual operation time is equal to the displayed value multiplied by 10.

#### Example

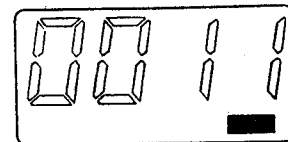


This display indicates between 110 hours 00 minutes 00 seconds and 119 hours 59 minutes 59 seconds (up to a maximum of 99,999 hours 59 minutes 59 seconds can be displayed).

### . CT

This mode displays the number of operations instead of the hours. The actual operation number is equal to the displayed value multiplied by 10.

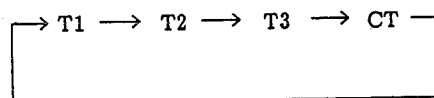
#### Example



This display indicates between 110 and 119 operations.

### 3-2-3. Mode Selection

When the mode select switch is pressed, the display rotates in the sequence shown below.



When the mode is set, the mode display bar in the designated mode lights or blinks. The VTR operation status at that time is described below.

Mode	Lights	Blinks
T1	. VTR power is off.	. VTR power is on.
T2	. VTR power is off. . VTR power is on in a mode other than THREADING END.	. Drum is rotating in the THREADING END mode.
T3	. VTR power is off. . VTR power is on in a mode other than F.FWD, REW, PLAY, SEARCH, REC, or EDIT.	. Tape is running in the F.FWD, REW, PLAY, SEARCH, REC, or EDIT mode.
CT		. Every time if VTR power is on or off.

### 3-3. MAINTENANCE AFTER REPAIRS

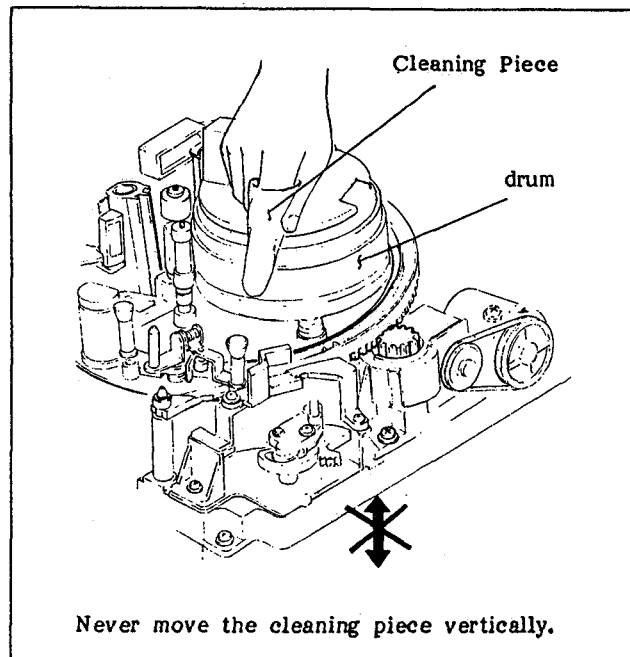
Perform the following maintenance after repairs regardless of the unit operating hours:

1. Video heads and stationary heads cleaning.  
(Refer to Sections 3-3-1 and 3-3-2.)
2. Tape movement area cleaning.  
(Refer to Section 3-3-3.)

**NOTE:** Wait until the cleaning fluid evaporates completely before inserting a cassette tape.

#### 3-3-1. Cleaning Procedure of the Video Head

Press a cleaning piece moistened with cleaning fluid and turn the drum slowly with hand.



**NOTE:** Never move the cleaning piece in the vertical direction of the head tip.

- . Clean the head with the power off.

#### 3-3-2. Cleaning Procedure of the Stationary Heads

Clean with a cleaning cloth moistened with cleaning fluid.

#### 3-3-3. Cleaning Procedure of the Tape Movement Areas

Wipe the tape bearing surfaces (of the tape guides, drum, capstan and pinch roller) with a cleaning piece moistened with cleaning fluid.

**NOTE:** Do not clean the surface of the condensation sensor on the lower drum with the moistened cleaning piece; clean it with a dry cloth.



### 3-4. PERIODIC CHECK

To obtain the higher function and performance of the unit or the longer lives of the unit and tape, perform the periodic checks below according to the hours meter reading on the front panel.

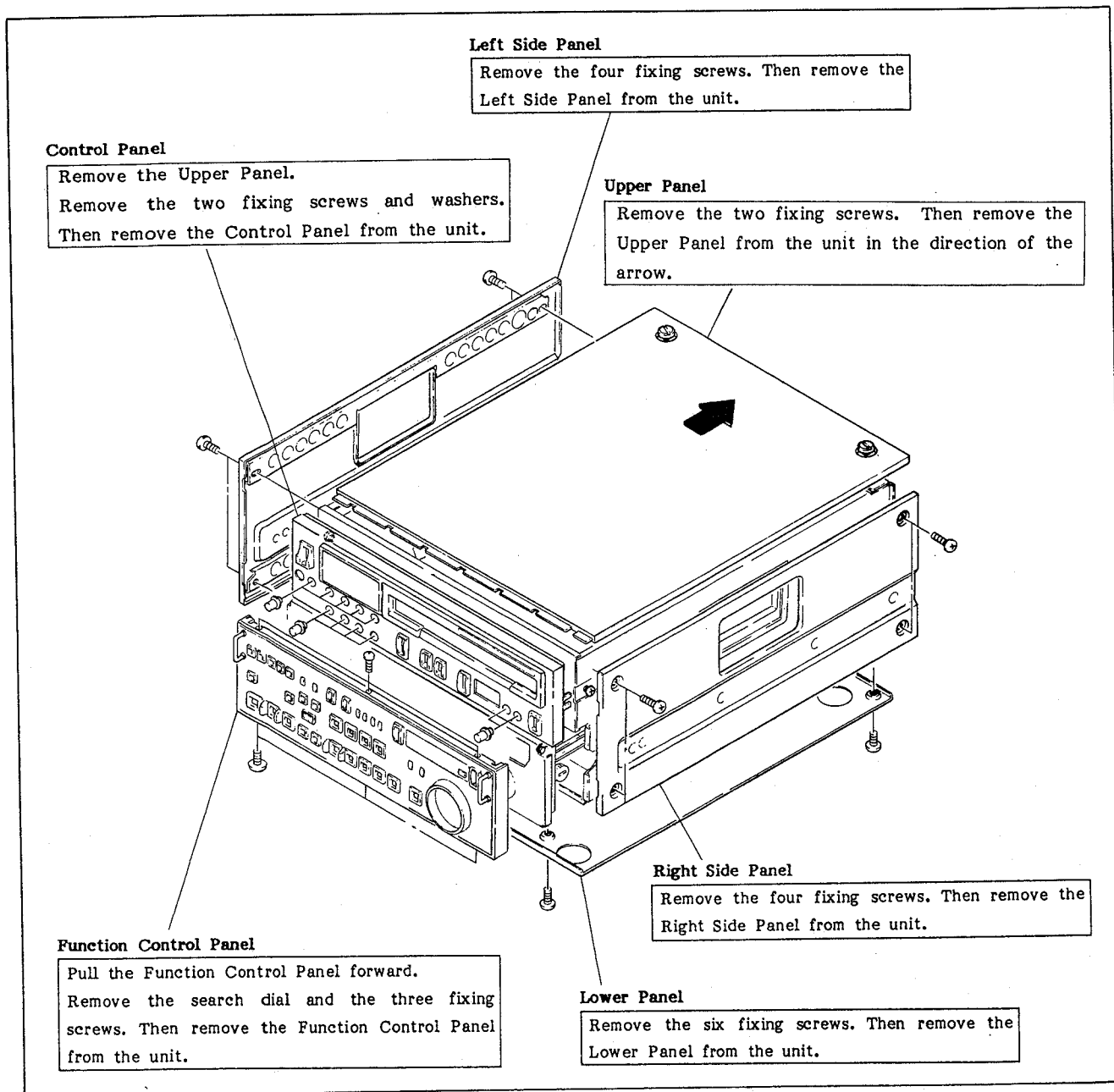
Item	Part No.	Hours meter mode	Replacement	Remarks
Upper drum replacement	A-6762-333-A	T2	1,000 H	The video head life is greatly affected by operational conditions and tapes. Clean every 500 hours.
Cleaning roller replacement	X-3675-858-1	T2	1,000 H	
Brush replacement	A-6050-645-A	T2	3,000 H	
Slip ring replacement	A-6050-507-A	T2	3,000 H	Clean every 1,000 hours with a designated jig.
Pinch roller replacement	X-3717-215-2	T3	1,000 H	Clean every 500 hours.
Lower drum replacement	A-6050-542-A	T2	3,000 H	Clean the drum's tape transport surface every 500 hours.
TG1 tape guide replacement	A-6746-027-C	T3	3,000 H	
TG2 tape guide replacement	A-6746-028-C	T3	3,000 H	
TG3 tape guide replacement	A-6746-029-C	T3	3,000 H	
TG4 tape guide replacement	A-6746-030-C	T3	3,000 H	
Replacement of tape guide's upper and lower flanges on threading ring	3-717-267-01 3-680-812-00	T3	3,000 H	
Reel motor replacement	A-6737-175-A	T3	3,000 H	
Capstan motor replacement	8-835-259-02	T3	3,000 H	
AUDIO/TC head replacement	8-825-623-21	T3	3,000 H	Clean every 500 hours.
Audio confi head replacement	8-825-771-11	T3	3,000 H	Clean every 500 hours.
CTL head replacement	8-825-554-73	T3	3,000 H	Clean every 500 hours.

Item	Part No.	Hours meter mode	Replacement	Remarks
Full Erase head replacement	8-825-770-72	T3	3,000 H	Clean every 500 hours.
Threading belt (LM belt) replacement	3-688-066-01	CT T2	100,000 times 4,000 H	Replace either of them.
Gear box replacement	A-6750-213-E	CT	200,000 times	Do not replace the threading motor only, but whole gear box.
T gear 1 assembly replacement	X-3717-250-1	CT	100,000 times	
Fan motor replacement	1-541-524-11	T1	10,000 H	
S/T brake solenoid replacement	1-454-417-41	CT	200,000 times	
Pinch solenoid replacement	1-454-338-00	CT	200,000 times	Used in LMS system.
	1-454-338-00	T3	3,000 H	Used in systems other than LMS.
Cassette-up compartment replacement	A-6751-360-D	CT	100,000 times	Do not replace the cassette-up compartment motor only, but whole cassette-up compartment.
Main brake replacement	A-6741-066-A	CT	200,000 times	
Ring roller replacement	3-675-866-00	CT	200,000 times	After ring roller replacement, perform the tape run adjustment and the tracking adjustment. Replacement during overhauling is recommended.
Hours meter replacement	1-548-152-11	Replace every five years.		The digital hours meter has an internal battery.

## SECTION 4

### SERVICE INFORMATION

#### 4-1. REMOVAL OF CABINET

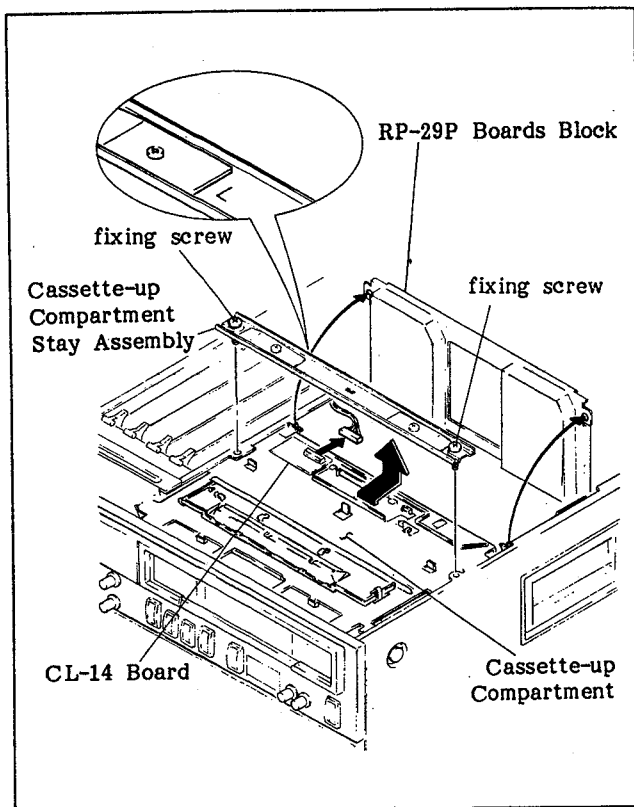


#### 4-2. REMOVAL/INSTALLATION OF CASSETTE-UP COMPARTMENT

1. Remove the Upper Panel. (Refer to Section 4-1.)
2. Open the RP-29P Boards Block.
- . Removal
3. Loosen the two fixing screws and remove the Cassette-up Compartment Stay. (This screw has a retainer.)
4. Disconnect connector CN331 on the CL-14 Board.
5. Move the Cassette-up Compartment in the direction as shown in the figure. Lift the Cassette-up Compartment Block slowly.

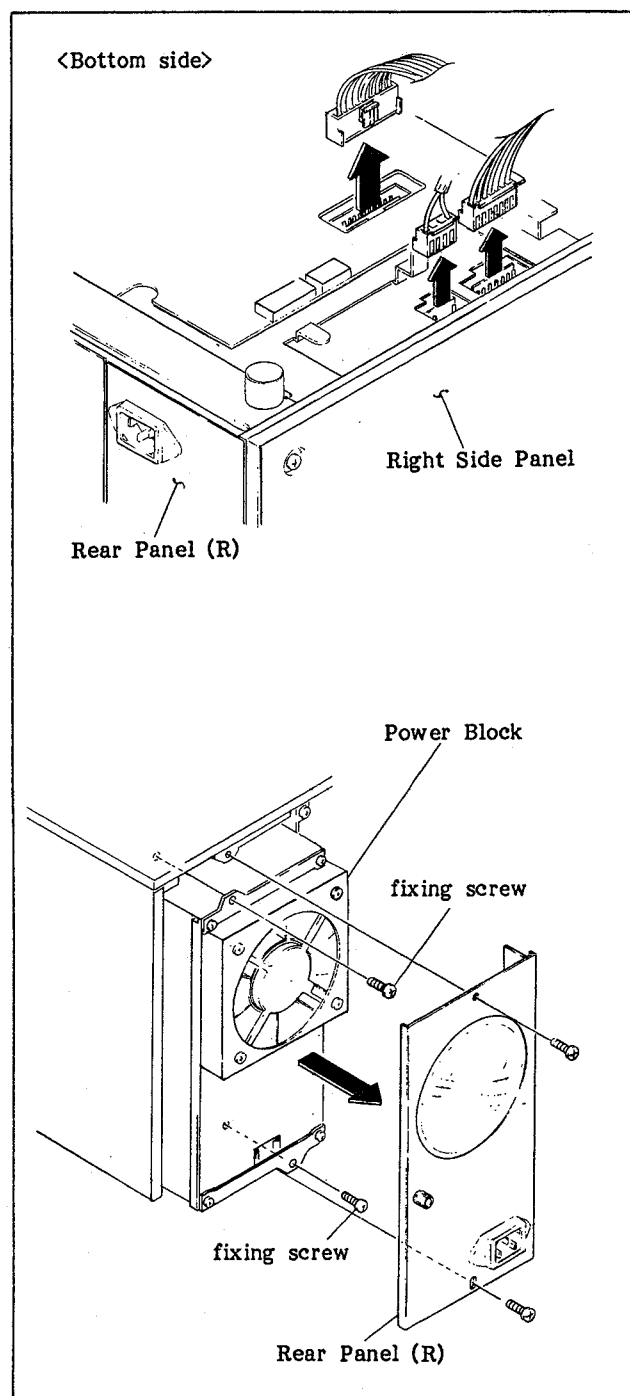
##### . Installation

6. Install the Cassette-up Compartment.
7. Make sure that the marked "L" on the Cassette-up Compartment Stay is on the left side; tighten the screw. And then tighten the screw on the right side.



#### 4-3. REMOVAL OF THE POWER BLOCK

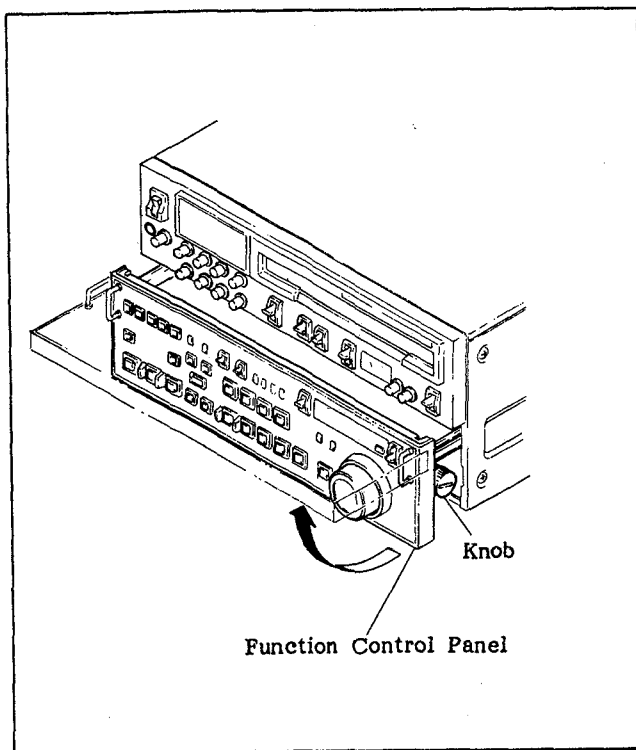
1. Remove the Lower Panel.
2. Remove the Shield Plate of the MB-191 Board.
3. Disconnect the connectors as shown in the figure.
4. Remove the Rear Panel (R).
5. Remove the two fixing screws as shown in the figure and remove the Power Block.



#### 4-4. HOW TO PULL IN/OUT THE FUNCTION CONTROL PANEL

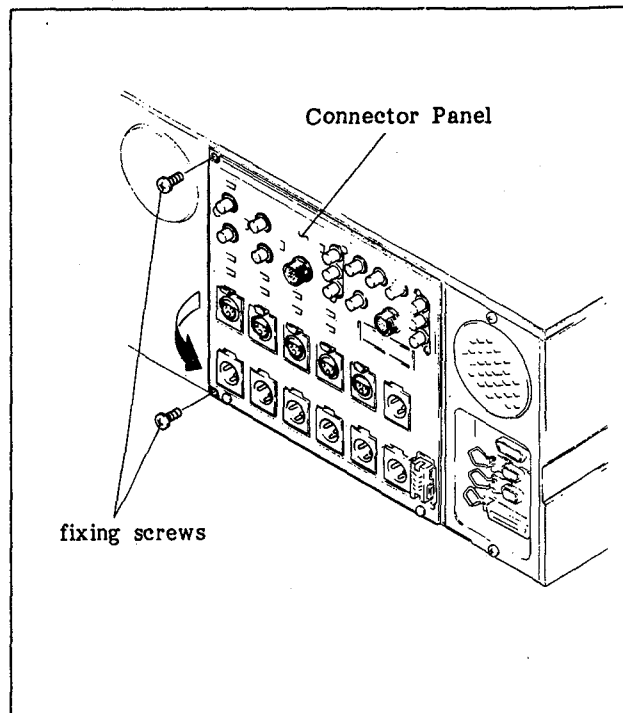
1. Pull the Function Control Panel on both right and left sides forward. Move the panel forward.
2. Pull it more forward to fix the panel. Lift the Function Control Panel. The panel moves maximum 90 degrees (the fixed position is selectable by five steps).
3. When putting the panel back in the unit, replace the panel and it into the unit.

**NOTE:** After using the panel, be sure to put it back into the unit.



#### 4-5. HOW TO OPEN THE CONNECTOR PANEL

Remove the two fixing screws shown in the figure, then open the Connector Panel in the direction of the arrow.



#### 4-6. NOTE FOR CHECK AND MAINTENANCE OF PRINTED CIRCUIT BOARD

Be sure to turn the power off before inserting or removing printed circuit boards.

#### 4-7. EXTENSION BOARD

The three extension board types are supplied in the BVW-75P. The Amp chassis printed circuit boards can be serviced using the extension board. Simply insert the extension board into the Amp chassis and connect the circuit board to be serviced to the end of the extension board.

Extension board	Connectable Printed Circuit Board
EX-116	SY-61, SY-64P
EX-134	AFM-1, AU-75P, AU-76P, DEC-46P, DT-13, DT-14P, EN-48P, MD-46P, SV-82, SV-83, SV-84P, TBC-9P, TC-40P, VO-18P
EX-151	DEC-42P, DM-56P, TBC-7D, TBC-12P

**NOTE:** In the EX-134 Board, the lever for removing board is installed only on one side.

#### 4-8. SPARE PARTS

(1)

The shaded and  $\Delta$ -marked components are critical to safety.  
Replace only with the same components as specified.

- (2) Replacement parts supplied from the Sony Parts Center will sometimes have a different shape and outside view from the parts which are used in the unit. This is due to "accommodating improved parts and/or engineering changed" or "standardization of genuine parts".
- This manual's exploded views and electrical spare parts lists indicate the part numbers of "the present standardized genuine parts".
  - Regarding engineering part changes by our engineering department, refer to Sony service bulletins and service manual supplements.
- (3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

#### **4-9. HOW TO OPERATE THE UNIT WITHOUT INSTALLING CASSETTE TAPE**

The following procedures are described without installing the Cassette-up Compartment.

##### **1. Threading**

- . Turn the power on. The threading ring rotates in a counterclockwise direction automatically, and the unit is put into the threading completion mode.

##### **2. PLAY**

- . Set DIP switch S106 on the SY-61 board to ON and set System Setup Item 902 to 1. When the PLAY button is pressed, the unit enters the PLAY mode. After adjustment is completed, set the DIP switch and setup menu to the former mode.

##### **3. Unthreading**

- . Press the EJECT button after the unit is put into the threading completion mode. The threading ring rotates in a clockwise direction.

##### **4. Search**

- . Turn the SEARCH dial after the unit is put into the threading completion mode.

##### **5. F.FWD and REW**

- . Select The DIP switch and setup menu as in Step 2. When the F.FWD or REW button is pressed, the unit enters the F.FWD or REW mode. After adjustment is completed, set the DIP switch and setup menu to the former mode.

##### **6. REC**

Select the DIP switch and setup menu as in Step 2. (After adjustment is completed, set them to the former mode.)

##### **Small Cassette**

- . Press the PLAY and the REC buttons while pressing the MISS-REC switch for small cassette on the left side after the unit is put into the threading completion mode.

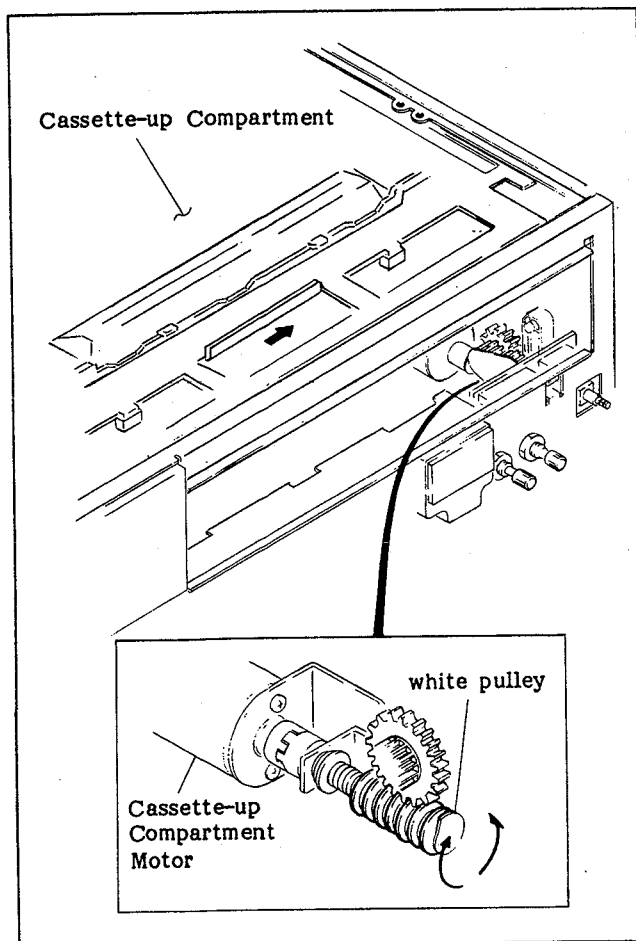
##### **Large Cassette**

- . Press the PLAY and the REC buttons while pressing the MISS-REC switch for large cassette on the right side after the unit is put into the threading completion mode.

#### 4-10. HOW TO REMOVE A CASSETTE WHEN THE TAPE IS SLACKENED IN THE UNIT

When the tape in the unit is slack, remove the cassette tape by the following procedures:

1. Turn the power off.
2. Open the RP-29P Boards Block.
3. Turn the pulley of the Gear Box Block until the Pinch Roller enters the EJECT completion mode.
4. Remove the Cassette-up Compartment Stay.
5. Disconnect connector CN331 on the CL-14 Board of the Cassette-up Compartment.
6. Pull out the function control Panel, raise it 90 degrees, and fix it.
7. Turn the white pulley as shown in the figure by hand while holding the cassette lid by hand to prevent it closing so that the Cassette-up Compartment moves up.
8. Stop rotating the white pulley just before the Cassette-up Compartment moves to the surface.
9. Lift the Cassette-up Compartment slowly from the unit while holding the cassette lid.
10. Close the cassette lid carefully so that it is not damaged.
11. Remove the cassette from the Cassette-up Compartment.
12. Release the lock of the cassette lid, wind the tape into the cassette by turning the reel hub on the back of the cassette by hand.
13. Turn the pulley as Step 7 so that the stage of the Cassette-up Compartment moves the cassette out position.
14. Install the Cassette-up Compartment into the unit.
15. Connect the connector, then install the Cassette-up Compartment Stay.
16. Clean the Motor Belt of the Gear Box Block with a cloth moistened with cleaning fluid.
17. Locate the cause of the trouble and remedy the problem.

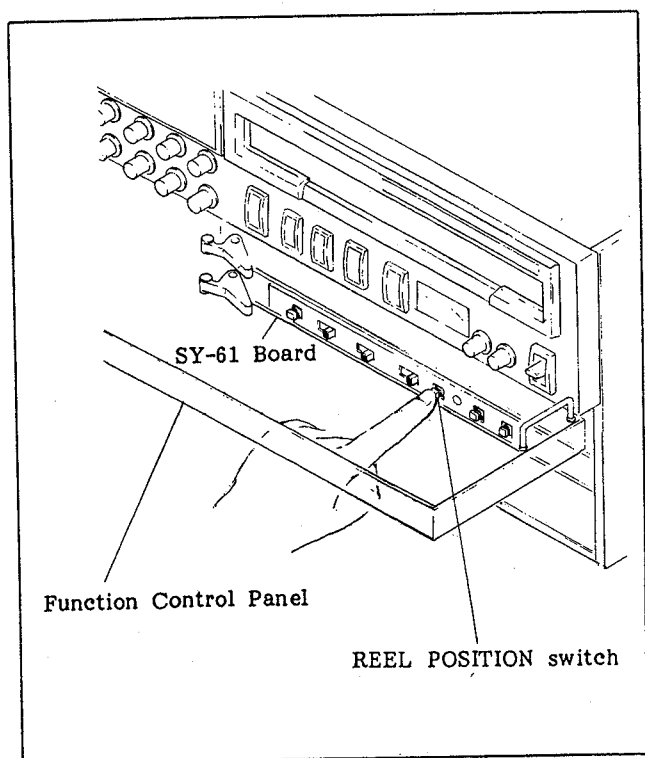




#### 4-11. HOW TO CHECK THE REEL TABLE OPERATION

- When power is turned on, you can check whether the Reel Table moves to the specified position without inserting the cassette tape.
- If the Cassette-up Compartment is not installed when the mechanism is adjusted, the Reel Table can be moved to the position corresponding to an L or S cassette according to the procedures below.

1. Disconnect connector CN331 on the CL-14 Board of the Cassette-up Compartment.
2. Turn the power on.
3. Press the EJECT button on the Function Control Panel.
4. Open the Function Control Panel and press the REEL POSITION select switch on the SY-61 Board.



5. The Reel Table moves.

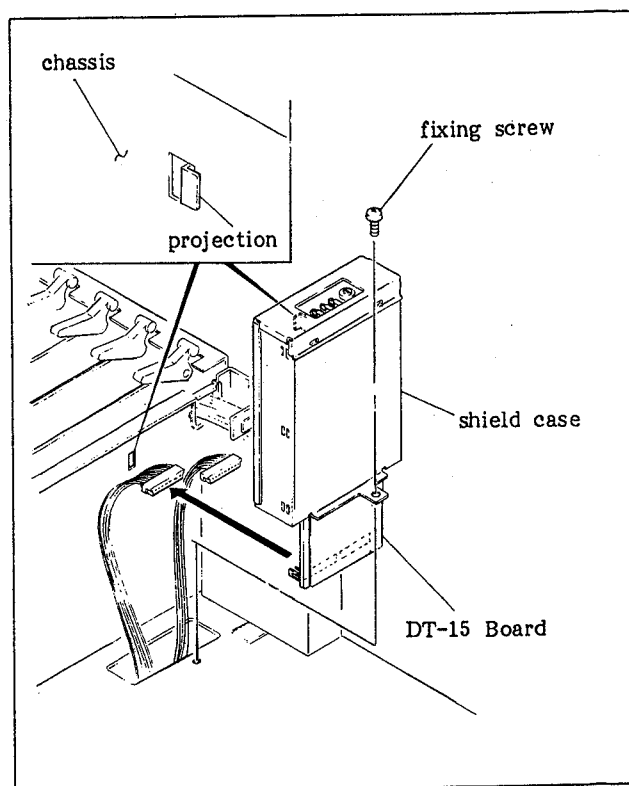
The set enters S mode from L mode or enters L mode from S mode. When the REEL POSITION select switch is pressed again, the set returns to the original mode.

#### 4-12. SERVICE OF THE CIRCUIT BOARD

The method of servicing circuit boards (except plug-in boards) is described below.

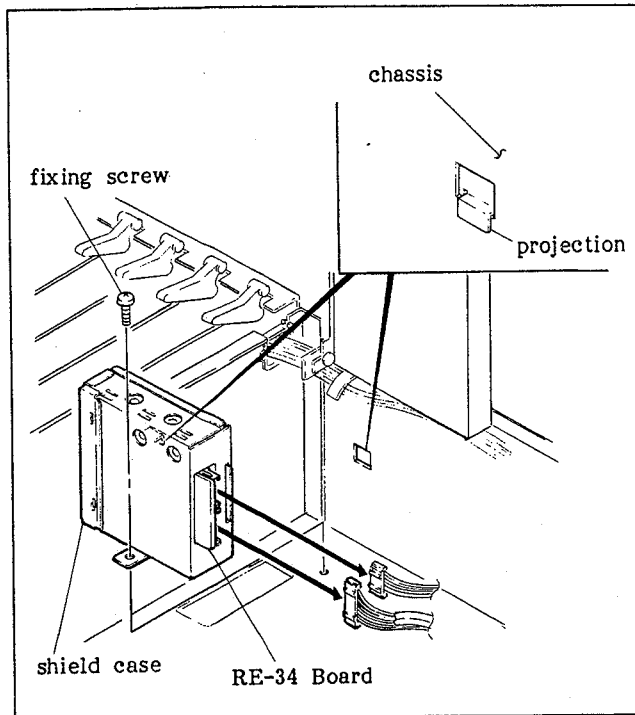
##### DT-15 Board

1. Remove the Upper Panel.
2. Open the RP-29P Boards Block.
3. Remove a fixing screw of the shield case.
4. Disconnect the harness connectors.
5. Remove the DT-15 Board from the unit.
6. When installing, hook the projection of the shield case into the chassis.



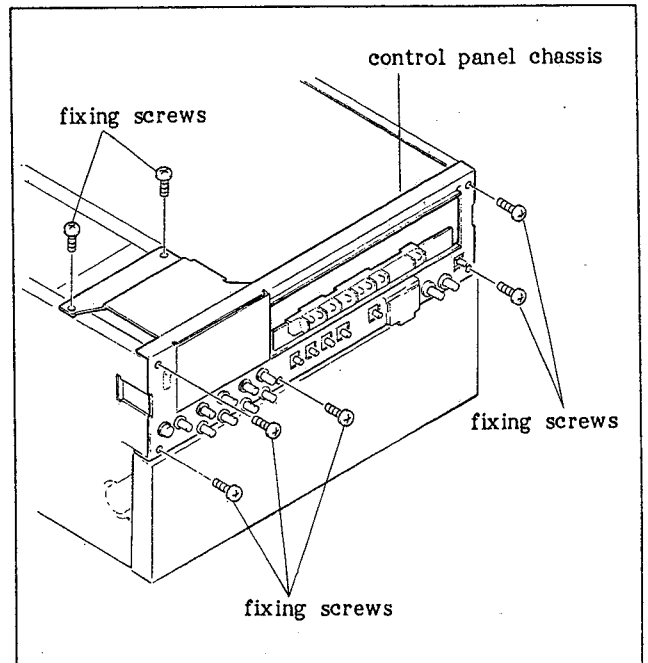
#### RE-34 Board

1. Perform as described in Steps 1 and 2 of "DT-15 Board".
2. Remove a fixing screw of the shield case.
3. Disconnect the harness connectors.
4. Remove the RE-34 Board from the unit.
5. When installing, hook the projection of the shield case into the chassis.

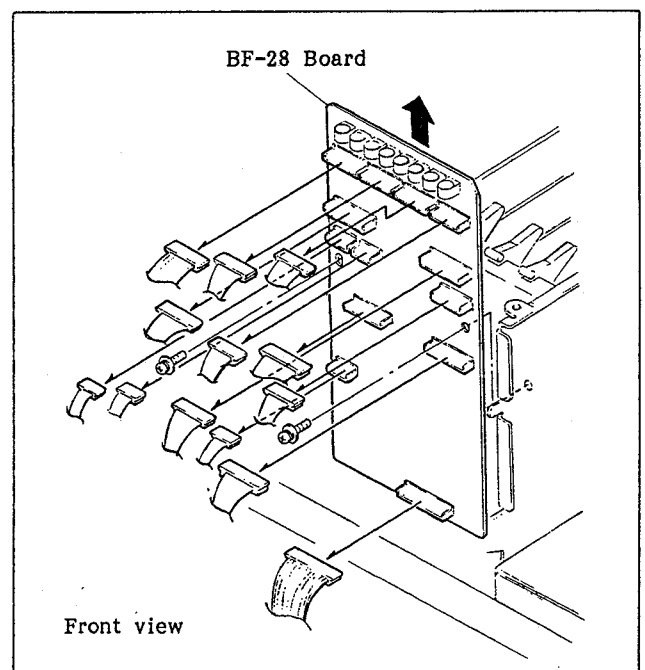


#### BF-28 Board

1. Remove the Upper Panel and Control Panel.
2. Remove the Cassette-up Compartment.
3. Remove the seven fixing screws shown in the figure, remove the control panel chassis.

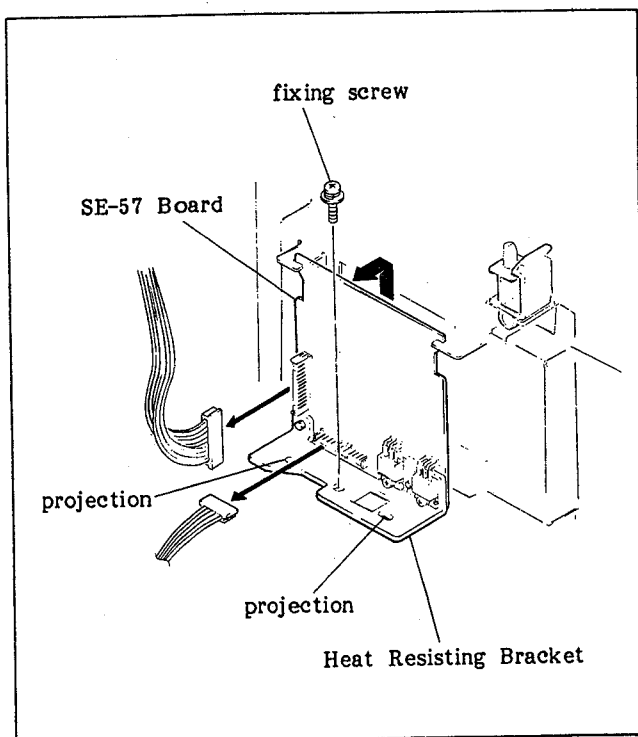


4. Disconnect the connectors.
5. Remove the two fixing screws, remove it from the unit.



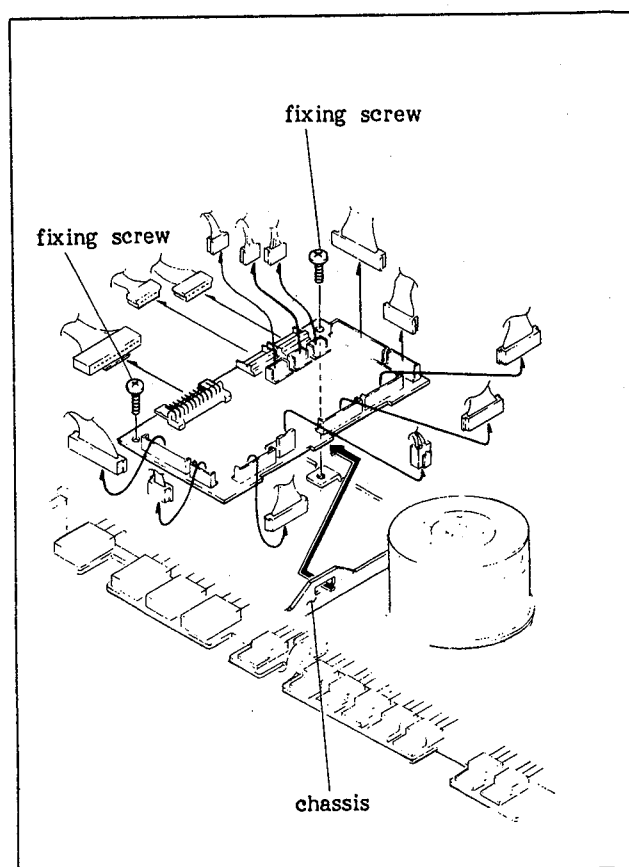
### SE-57 Board

1. Remove the Upper Panel.
2. Open the RP-29P Boards Block.
3. Remove a fixing screw of the Heat Resisting Bracket.
4. Disconnect the connectors.
5. Remove the SE-57 Board from the unit.
6. When installing, fit the two projections of the Heat Resisting Bracket into the chassis.



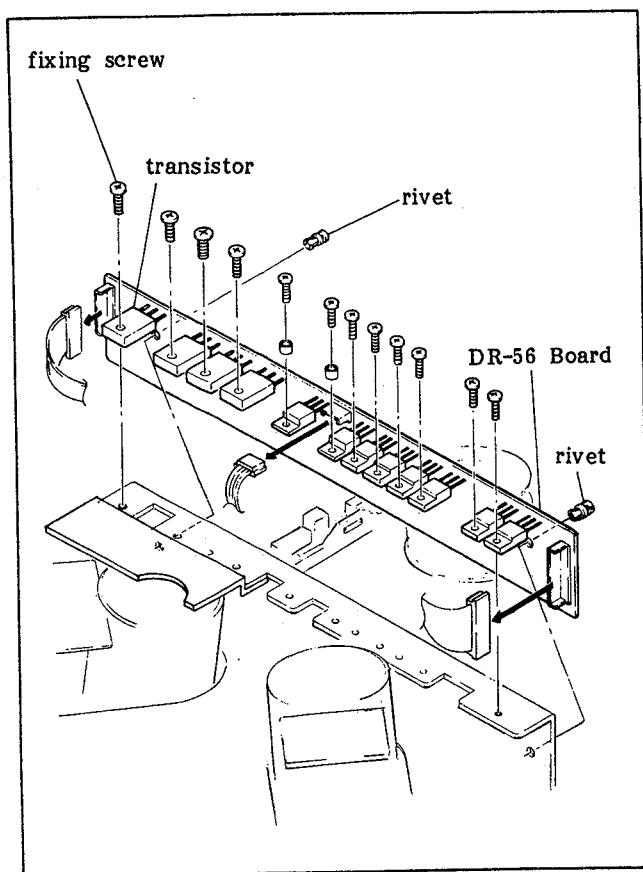
### RE-28 Board

1. Set the Reel Table to S mode by pressing the REEL POSITION select switch on the SY-61 Board.
2. Remove the SY-61 and SY-64P Boards.
3. Remove the Lower Panel.
4. Remove the Reel Table Transfer Motor Block.
5. Disconnect the connectors.
6. Remove the two fixing screws and remove the RE-28 Board from the unit.
7. When installing, hook one side of the RE-28 Board into the chassis and tighten the screws.



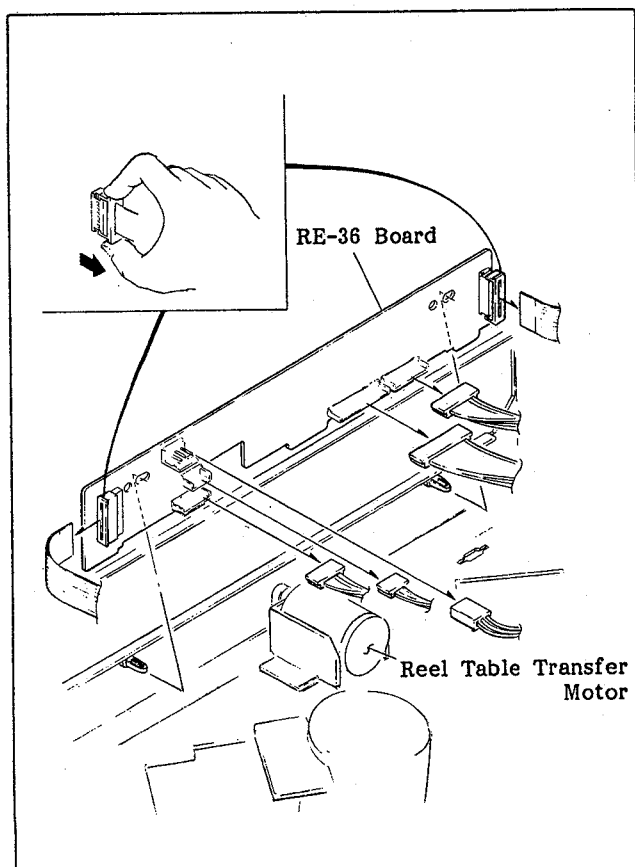
#### DR-56 Board

1. Remove the SY-61 and SY-64P Boards.
2. Remove the Lower Panel.
3. Disconnect the connectors.
4. Remove the two rivets and twelve fixing screws of the transistors.
5. Remove the DR-56 Board from the unit.



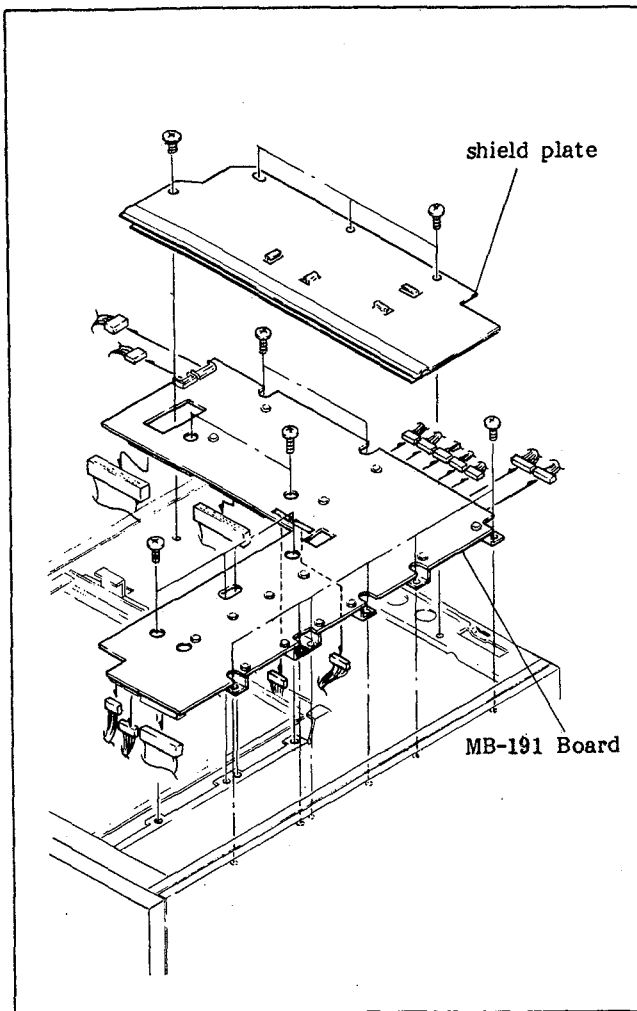
#### RE-36 Board

1. Put the unit into the small cassette mode to turn the Reel Table Transfer Pulley.
2. Remove the SY-61 and SY-64P Boards.
3. Remove the Lower Panel.
4. Remove the Reel Table Transfer Motor.
5. Remove the RE-36 Board from the unit.
6. Disconnect the connectors and flat cables.



#### MB-191 Board

1. Remove the Upper Panel.
2. Remove the plug-in type printed circuit boards.
3. Disconnect the connectors on the inside.
4. Remove the Lower Panel.
5. Remove the shield plate of the MB-191 Board.
6. Remove the fourteen fixing screws of the MB-191 Board.
7. Disconnect the connectors.



#### SY-61 and SY-64P Boards

1. Open the Function Control Panel.
2. Loosen the fixing screws and slide the SY stopper in the direction indicated by arrow A.
3. Tighten the fixing screws, then remove the SY-61 and SY-64P Boards.
4. Insert the Boards, then loosen the fixing screws. Slide the SY stopper in the direction indicated by arrow B while slightly pulling the Board Lever toward you.
5. Tighten the fixing screws.

**NOTE:** When the set is transported, be sure to fix the SY stopper as shown in Fig. 1.

Fig. 1

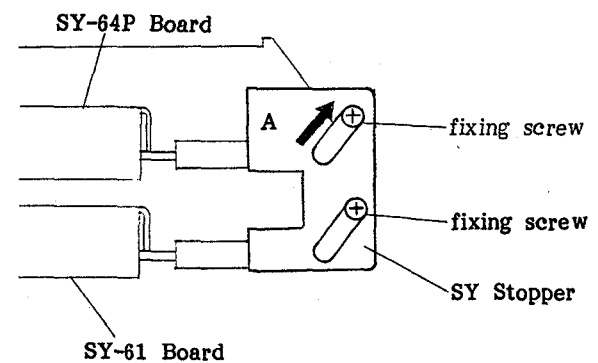
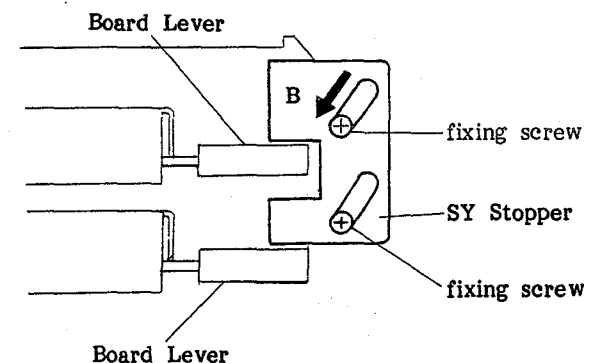
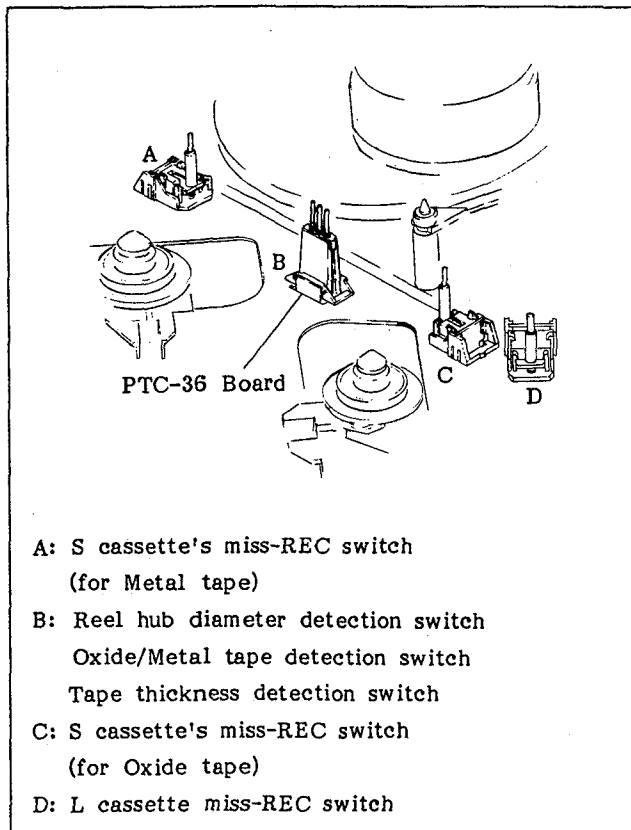


Fig. 2

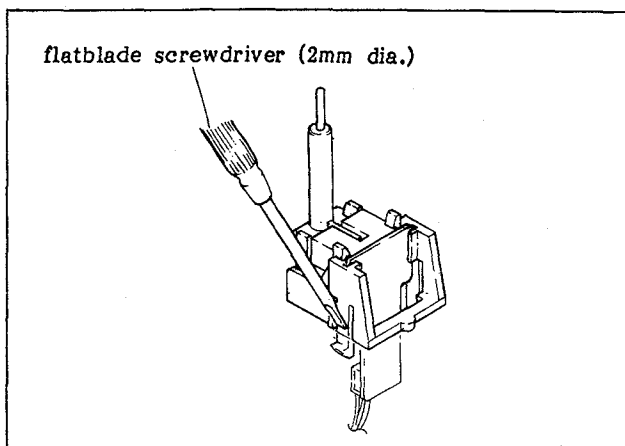


#### 4-13. HOW TO REMOVE THE DETECTION SWITCHES

The method of removing of the four Detection Switches is described below.



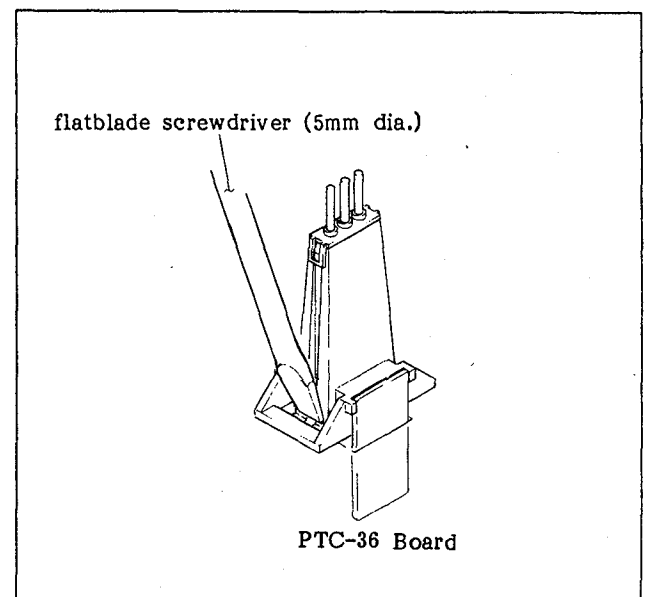
- When removing switches A, C, and D  
While pushing the leg of one side with a flatblade screwdriver (2 mm dia.), lift it, then pull out the switch.



- When removing switch B

While pushing the legs of one side (there are two legs each on the right and left sides) with a flatblade screwdriver (5 mm dia.), lift it. Then pull out the switch.

When installing it, be sure to install the PTC-36 Board in the front side.



**NOTE:** The detection switch lifts lightly so as not to disconnect the connector.

#### 4-14. NOTE FOR THE SLIP RING

Handle the slip ring on the drum with care because it is easy to bend.

#### 4-15. HOW TO OPEN THE CASSETTE LID

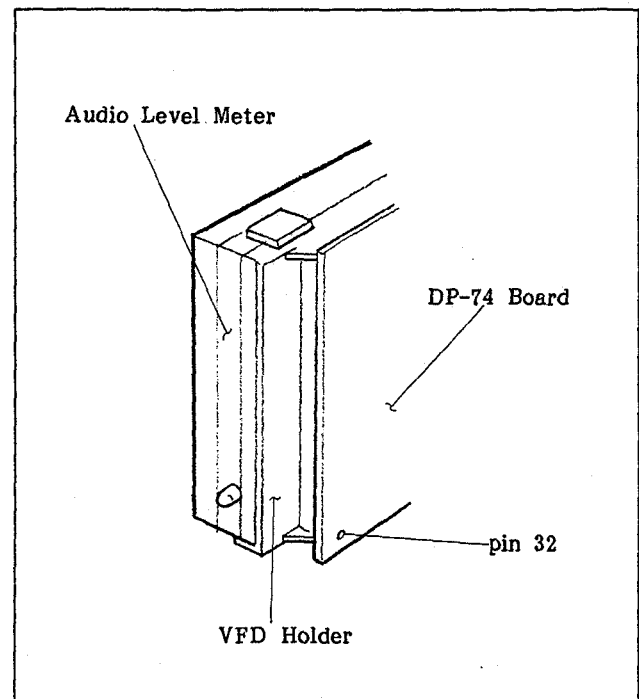
Large cassette: The lid is opened by releasing the projecting locks on both sides of the cassette.

Small cassette: The lid is opened by releasing the projecting lock on the left side as viewed from the top of the cassette.

#### 4-16. REPLACEMENT OF AUDIO LEVEL METER

Repair or replace the audio level meter on the upper left of the front panel and install it on the front chassis as follows:

1. Check that pin 32 of the audio level meter is less than 1mm long from the DP-74 board.
2. If pin 32 is more than 1mm long, it may touch the shield case. Cut off the pin using a nipper so that it is less than 1mm.



#### 4-17. FIXTURE

Part number	Description	For use
J-6001-820-A	Drum Eccentricity Gauge (3)	Upper drum eccentricity adjustment
J-6001-830-A	Drum Eccentricity Gauge (2)	
J-6001-840-A	Drum Eccentricity Gauge (1)	
J-6031-820-A	Multi Connector Cable (BIBNC)	Video alignment
J-6080-011-A	Reel Table Tension Gauge	Brake torque adjustment
J-6086-570-A	Flatness Plate	Audio/TC head slantness adjustment
J-6087-000-A	Drum Eccentricity Gauge (5)	Upper drum eccentricity adjustment
J-6152-450-A	Wire Clearance Gauge	Clearance check
J-6190-800-A	Tension Regulator Slantness Check Tool	Tension regulator slantness check
J-6320-680-A	Reel Table Height Gauge	Reel table height adjustment
J-6320-870-A	Reel Motor Shaft Slantness Check Gauge	Reel motor shaft slantness adjustment
J-6320-880-A	Cassette Reference Plate (L)	Reel table adjustment
Y-2031-001-0	Cleaning Fluid	Cleaning
2-034-697-00	Cleaning Piece	
7-723-902-00	Inspection Mirror	Video tracking adjustment
7-732-050-20	Tension Scale (50 g full scale)	Tension adjustment
7-732-050-30	Tension Scale (100 g full scale)	
8-960-096-51	Alignment Tape, CR2-1B PS	Video tracking tape
8-960-096-86	Alignment Tape, CR8-1B PS	Audio adjustment (metal particle tape)
8-960-096-91	Alignment Tape, CR5-1B PS	Video and servo alignment for recorder and player (metal particle tape)
8-960-098-44	Alignment Tape, CR5-2A PS	Video and servo alignment for recorder and player (oxide tape)
8-960-098-45	Alignment Tape, CR8-1A PS	Audio adjustment (oxide tape)
9-911-053-00	Thickness Gauge	Clearance check
Standard Products	Head Demagnetizer (HE-4)	Head demagnetizing



## SECTION 5

### REPLACEMENT OF MAJOR PARTS

#### 5-1. REPLACEMENT OF THE REEL MOTOR

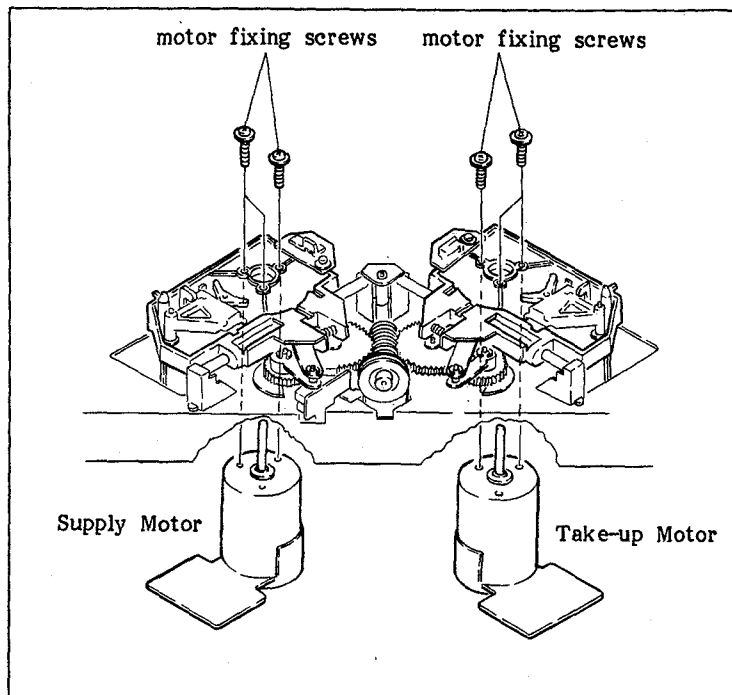
- Replacement procedures for the Take-up Reel Motor and the Supply Reel Motor are the same.

**Tool:** Hex. key (across flat has 1.5 mm)

**Mode:** Unthreading end mode

**Replacement procedure:**

- (1) Open the Function Control Panel, remove the SY-61 and SY-64P Boards.  
(For the SY-64P Board, remove the cable from the KY-96 Board on the back of the Control Panel Block.)
- (2) Disconnect the three connectors of the RM-40 Board on the motor from the back of the unit.
- (3) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2, Replacement of the Reel Table.
- (4) Remove the three fixing screws of the motor as shown in the figure, replace it with a new one.
- (5) Perform the adjustments in Section 5-23.



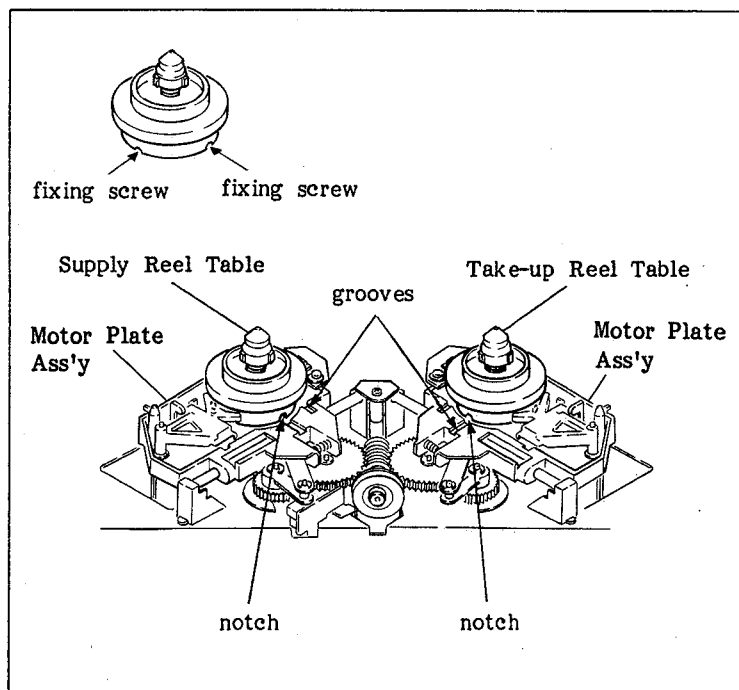
## 5-2. REPLACEMENT OF THE REEL TABLE

- . Replacement procedures for the Take-up Reel Table and the Supply Reel Table are the same.

**Tool:** Hex. key (across flat has 1.5 mm)

### Replacement procedure:

- (1) Turn the Reel Table by hand so that the one of the two notches under the Reel Table is in the groove of the Motor Plate Ass'y.
- (2) Insert the hex. key along the groove into the Reel Table, loosen the fixing screw.
- (3) Turn the Reel Table more so that the other notch is in the groove of the Motor Plate Ass'y.
- (4) Loosen the fixing screw of the Reel Table as described in procedure (2).
- (5) Replace the Reel Table with a new one. (Be careful not to drop the washer.)
- (6) Clean the outer circumference of the Reel Table with a cloth moistened with cleaning fluid.
- (7) Perform the adjustments in Section 5-23.

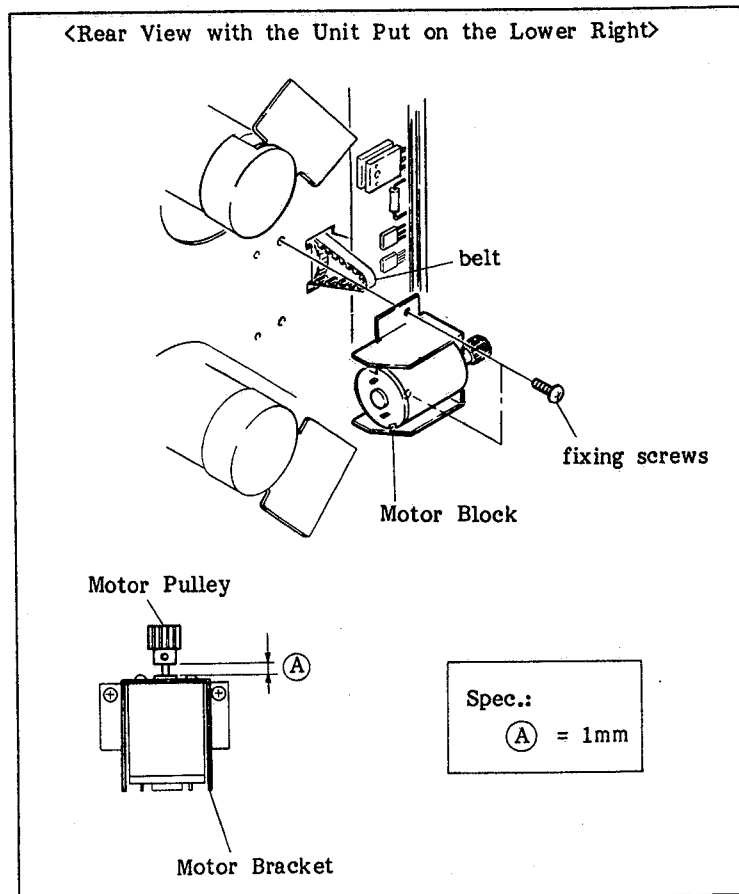


### 5-3. REPLACEMENT OF THE REEL TABLE TRANSFER MOTOR

**Tool:** Hex. key (across flat has 1.27 mm)

#### **Replacement procedure:**

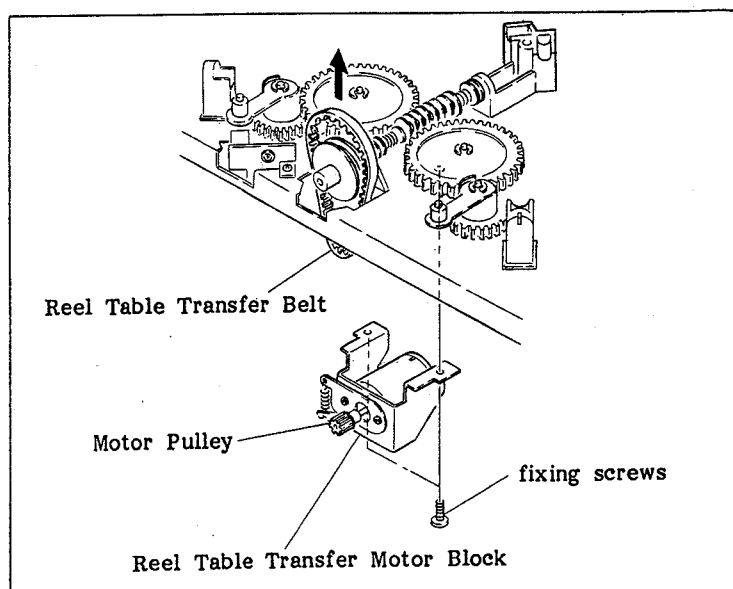
- (1) Remove the SY-61 and SY-64P Boards, put on the unit right side down.
- (2) Remove the two fixing screws as shown in the figure, remove the Motor Block from the unit.
- (3) Unsolder the two motor leads.
- (4) Remove the setscrew of the Motor Pulley.
- (5) Remove the two fixing screws from the Motor Bracket, replace it with the new one.
- (6) Solder the white lead to the "+" terminal of the motor and the red lead to the other terminal.
- (7) Install the Motor Pulley so that the clearance between the pulley and the Motor meets the required specification.
- (8) Hook the Reel Table Transfer Belt to the Motor Pulley, then install the Motor Block on the unit.



### 5-4. REPLACEMENT OF THE REEL TABLE TRANSFER BELT

#### **Replacement procedure:**

- (1) Open the Function Control Panel. Remove the SY-61 and SY-64P Boards from the unit.
- (2) Remove the Reel Table Transfer Motor Block from the back side of the unit.
- (3) Remove the Reel Table Transfer Belt from the top of the unit, replace the belt with a new one.
- (4) Hook the belt to the Motor Pulley of the Reel Table Transfer Motor Block, install it in the unit.

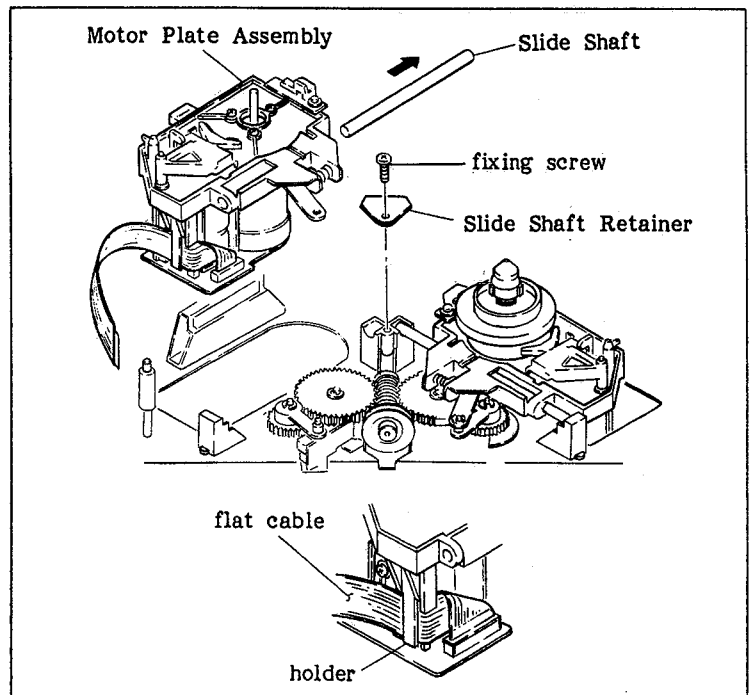


## 5-5. REPLACEMENT OF THE MOTOR PLATE ASSEMBLY

. Replacement procedures for the take-up side and the supply side are the same.

### Replacement procedure:

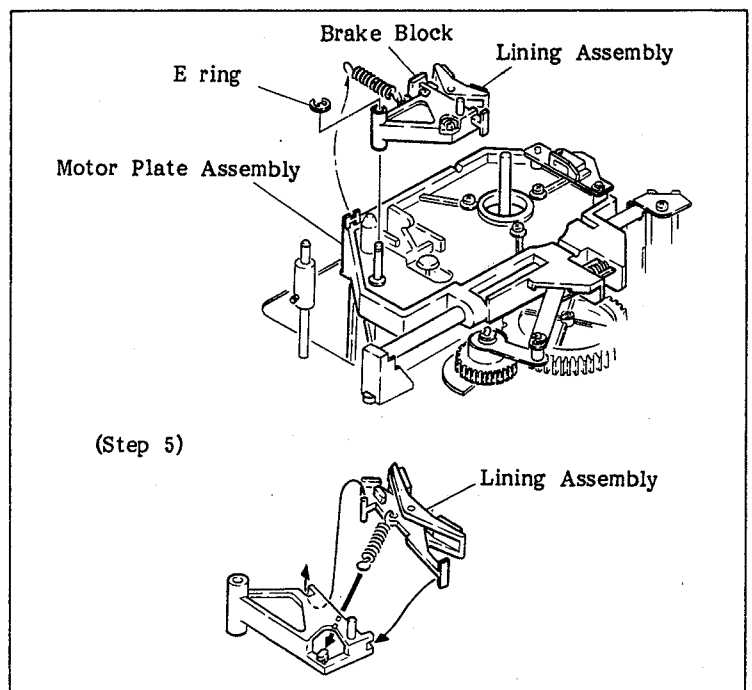
- (1) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2.
- (2) Remove the Slide Shaft Retainer.
- (3) Move the Slide Shaft in the direction of the arrow and remove it. Lift the Motor Plate Ass'y, disconnect the flat cable CN883 on the RM-40 Board.
- (4) Connect the flat cable to the RM-40 Board on the new Motor Plate Ass'y. Insert the flat cable into the holder as shown in the figure.
- (5) Clean the Slide Shaft with a cloth moistened with cleaning fluid.
- (6) Insert the Slide Shaft, and then install it in the unit.
- (7) Install the Slide Shaft Retainer.
- (8) Perform the adjustments in Section 5-23.



## 5-6. REPLACEMENT OF THE REEL TABLE BRAKE

### Replacement procedure:

- (1) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2.
- (2) Remove the E ring as shown in the figure.
- (3) Remove the spring on the Motor Plate Ass'y side.
- (4) Remove the Brake Block.
- (5) Remove the spring of the Brake Block as shown in the figure, then remove the Lining Ass'y.
- (6) Replace it with a new one, reassemble in the reverse order.



## 5-7. REPLACEMENT OF THE UPPER DRUM

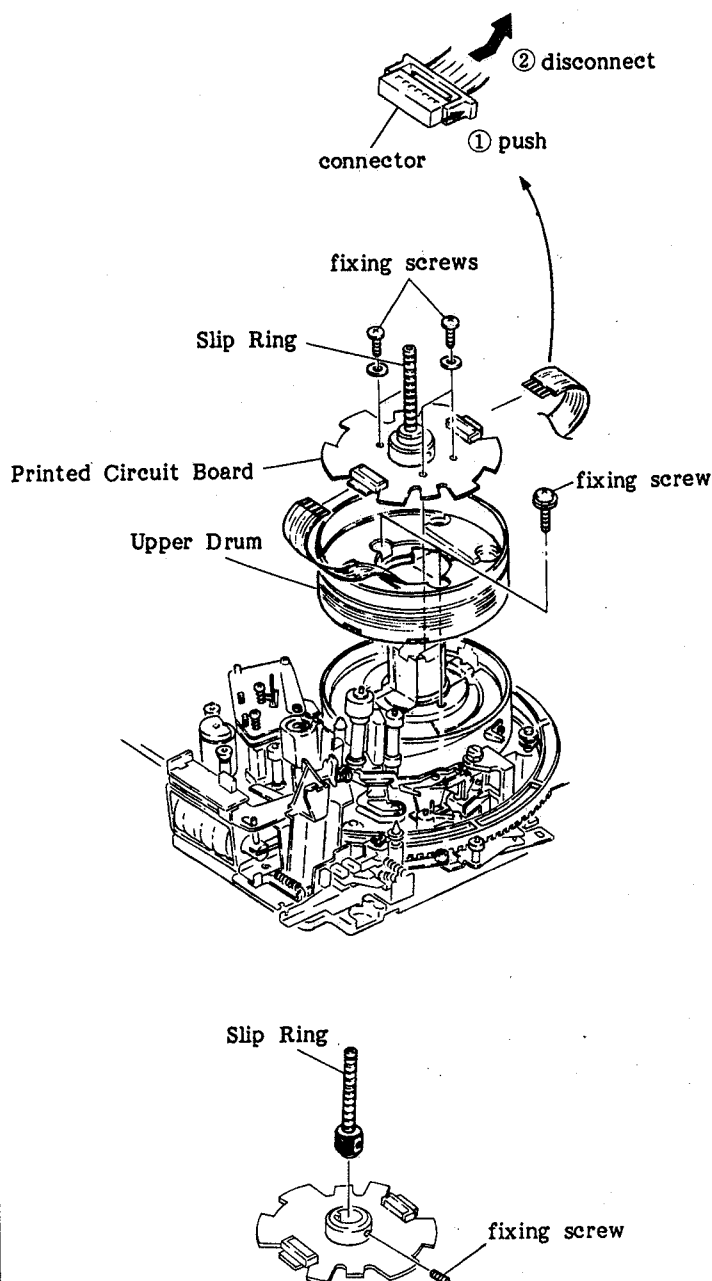
- . The Rotary Video Heads cannot be replaced individually, the entire Upper Drum Assembly must be replaced when any one of these heads fails.
- . The printed circuit board of the Upper Drum Assembly be able to use for the new drum.

**Tool:** Drum eccentricity gauge (1)  
Drum eccentricity gauge (2)  
Drum eccentricity gauge (3)  
Drum eccentricity gauge (5)  
Cleaning fluid  
Cleaning piece

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
- (2) Disconnect connectors CN661 and CN662 on the SR-26 Board of the Brush Block.
- (3) Remove the Brush Cover and the brush of the Slip Ring Block.
- (4) Remove the fixing screws of the Slip Ring, then remove the Slip Ring.
- (5) Unsolder the twelve leads and two connectors on the printed circuit board of the Upper Drum. Remove the four fixing screws of the printed circuit board, then remove the printed circuit board from the Upper Drum Ass'y.
- (6) Remove the two fixing screws of the Upper Drum Ass'y, and then remove the Upper Drum Ass'y from the unit.
- (7) Clean the contacting surfaces of the flange and new Upper Drum Ass'y with a cloth moistened with cleaning fluid. (If there is a spacer between the drum and the flange, it should remain in place, or be reinstalled in the same place with the new Upper Drum Ass'y. The spacer is 0.01 mm, 0.03 mm, 0.05 mm, or 0.1 mm.)

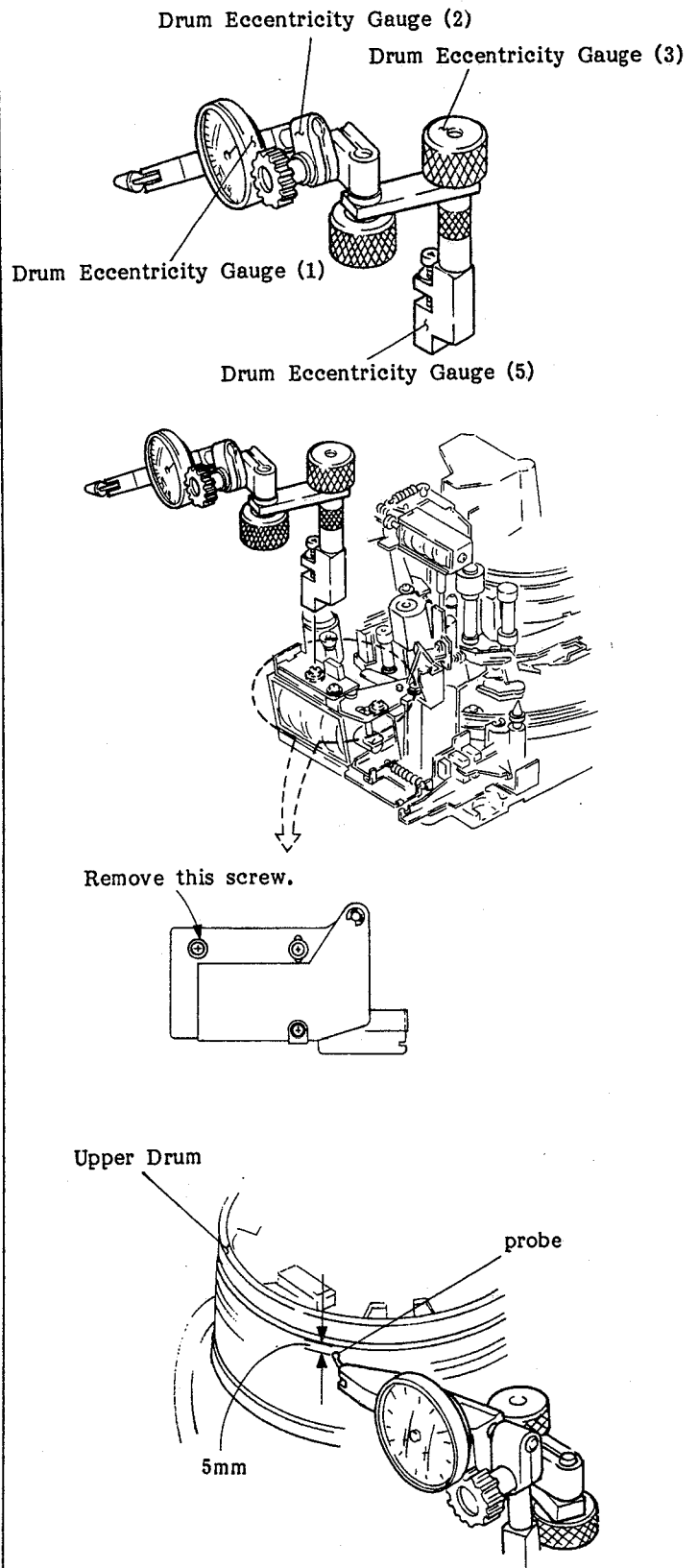
### <Removing the Connector>



- (8) Install the printed circuit board on the Upper Drum Ass'y with four fixing screws so that the marked "A" on the printed circuit board is placed to marked "A" on the Upper Drum Ass'y.
- (9) Place the marked "A" on the printed circuit board with the marked "A" of the Lower Drum Ass'y. Thread snugly with two fixing screws but do not tighten.

**Adjustment procedure:**

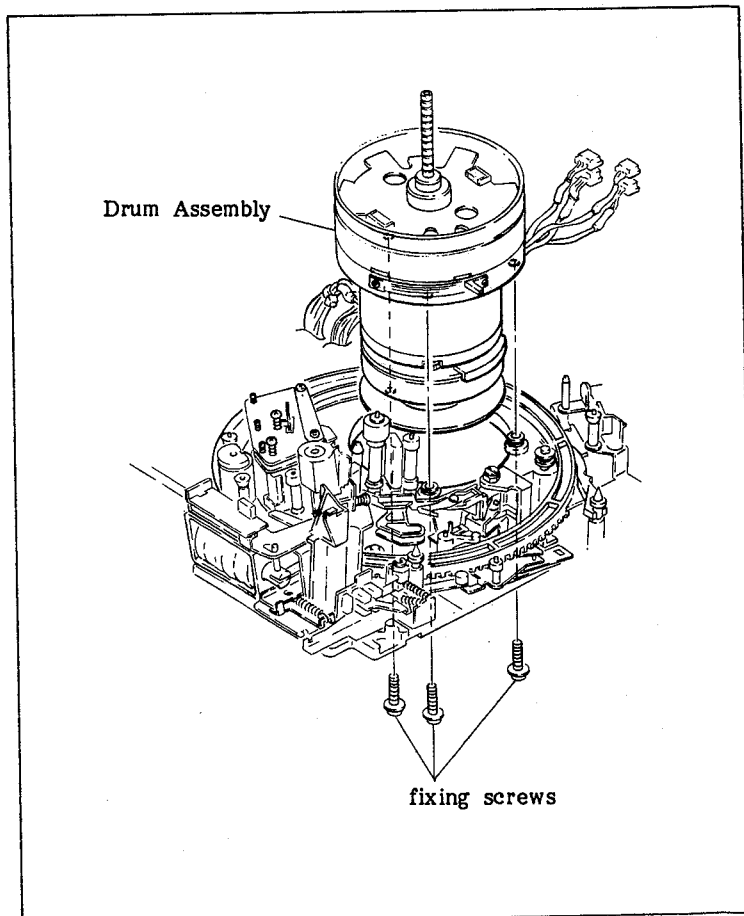
- (1) Assemble the drum eccentricity gauges (1), (2), (3), and (5) as shown in the figure. Remove the screws shown in the figure and mount the assembled gauges in the hole so that the tip probe is positioned about 5 mm from the overmost circumference top edge of the Upper Drum.
- (2) Turn the Upper Drum slowly clockwise direction and confirm that the pointer deflection of the gauge is within 5 microns during one complete turn of the Upper Drum. If this specification is satisfied, proceed to Step (5). If it is not, perform then continue with the remaining Steps.
- (3) Tap the top outer circumference of the Upper Drum with a nylon hammer or a screwdriver handle so that the gauge deflection remains within 5 microns.
- (4) After adjustments, tighten the two fixing screws that secure the Upper Drum alternately and gradually using a tightening torque of 8 kg. cm.
- (5) After the screws are tightened, check again that the eccentricity of the Upper Drum is within 5 microns.
- (6) Connect the two connectors, solder the twelve leads.
- (7) Install the brush, Brush Cover, and Cleaning Roller Block and connect the connectors.
- (8) Perform the adjustments in Section 5-23.



## 5-8. REPLACEMENT OF THE DRUM ASSEMBLY

### Replacement procedure:

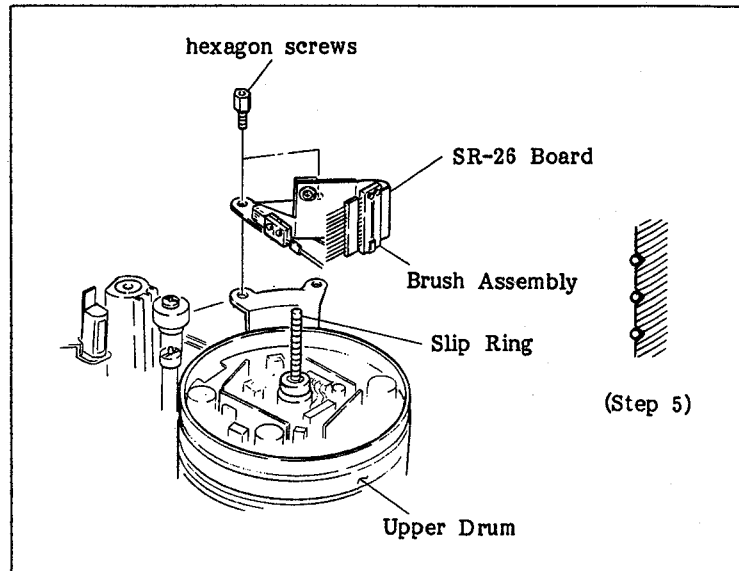
- (1) Remove the Cleaning Roller Block.
- (2) Disconnect connectors CN661 and CN662 on the SR-26 Board of the Brush Block.
- (3) Remove the Brush Cover and the brush of the Slip Ring Block.
- (4) Disconnect connectors CN114, CN115, CN191, and CN117 on the MB-191 Board.
- (5) Disconnect connectors CN812 and CN823 on the RE-28 Board.
- (6) Disconnect connectors CN641, CN642, CN643, and CN644 on the RP-29P Board.
- (7) Remove the three fixing screws on the back of the unit, and then remove the defective drum.
- (8) Install the Drum Ass'y on the base. Tighten the fixing screws while turning the Drum Ass'y in a counterclockwise direction as viewed from top of the unit.
- (9) Connect the connectors of the drum harness.
- (10) Install the brush, Brush Cover, and Cleaning Roller Block and connect the two connectors on the SR-26 Board.
- (11) Perform the adjustments in Section 5-23.



## 5-9. REPLACEMENT OF THE BRUSH ASSEMBLY

### Replacement procedure:

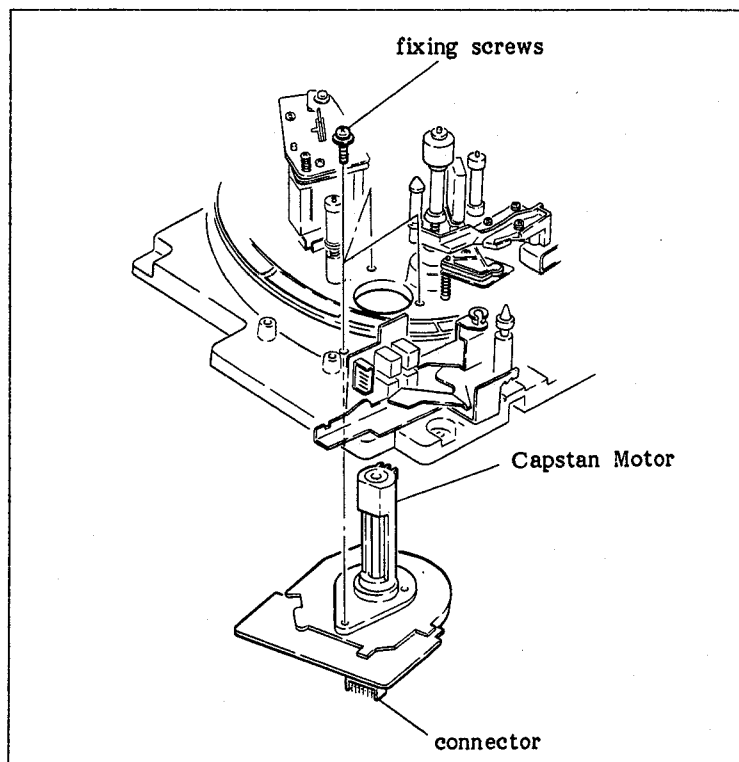
- (1) Remove the Cleaning Roller Block.
- (2) Remove the fixing screw, remove the Brush Cover.
- (3) Disconnect connectors CN661 and CN662 on the SR-26 Board.
- (4) Remove the two hexagon screws, replace the Brush Ass'y with a new one.
- (5) Check that the Brush touches the Slip Ring as shown in the figure.
- (6) Install the Brush Cover, two connectors on the SR-26 Board, and the Cleaning Roller Block.
- (7) Perform the adjustments in Section 5-23.



## 5-10. REPLACEMENT OF THE CAPSTAN MOTOR

### Replacement procedure:

- (1) Open the Function Control Panel, remove the SY-61 and SY-64P Boards.
- (2) Remove the two fixing screws of the Pinch Solenoid Block, and then remove the Pinch Solenoid Block from the unit.
- (3) Disconnect connector CN1 of the Capstan Motor on the back of the unit.
- (4) Remove the three fixing screws (a fixing screw is under the Pinch Solenoid Block); remove the Capstan Motor from the unit.
- (5) Install the new Capstan Motor. Tighten the three fixing screws while turning the motor in the clockwise direction, as viewed from top of the unit.
- (6) Install the Pinch Solenoid Block in the unit.
- (7) Perform the adjustments in Section 5-23.





## 5-11. REPLACEMENT OF THE AUDIO/TC HEAD

- The Audio/TC Head and the Audio Confidence Head are combined in one unit: Called the AT Head Block.

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
- (2) Remove the two fixing screws of the AT Head Block, then remove the AT Head Block from the unit.
- (3) Unsolder the six leads on the board (upper portion) of the Audio/TC Head.
- (4) Remove the two fixing screws as shown in the figure, then remove the Audio/TC Head Block from the AT Head Block.
- (5) Remove the fixing screw of the AT Shield Case (2) in the lower portion. Remove the AT Shield Case (2) from the Audio/TC Head Block.
- (6) Remove the two fixing screws of the AT Shield Case (1), then remove the Audio/TC Head.
- (7) Unsolder the six leads on the board (lower portion) of the Audio/TC Head.
- (8) Replace the Audio/TC Head with a new one.
- (9) Install the Audio/TC head in the reverse order of Steps (1) to (7).
- (10) After replacement, perform the adjustments in Section 5-23.

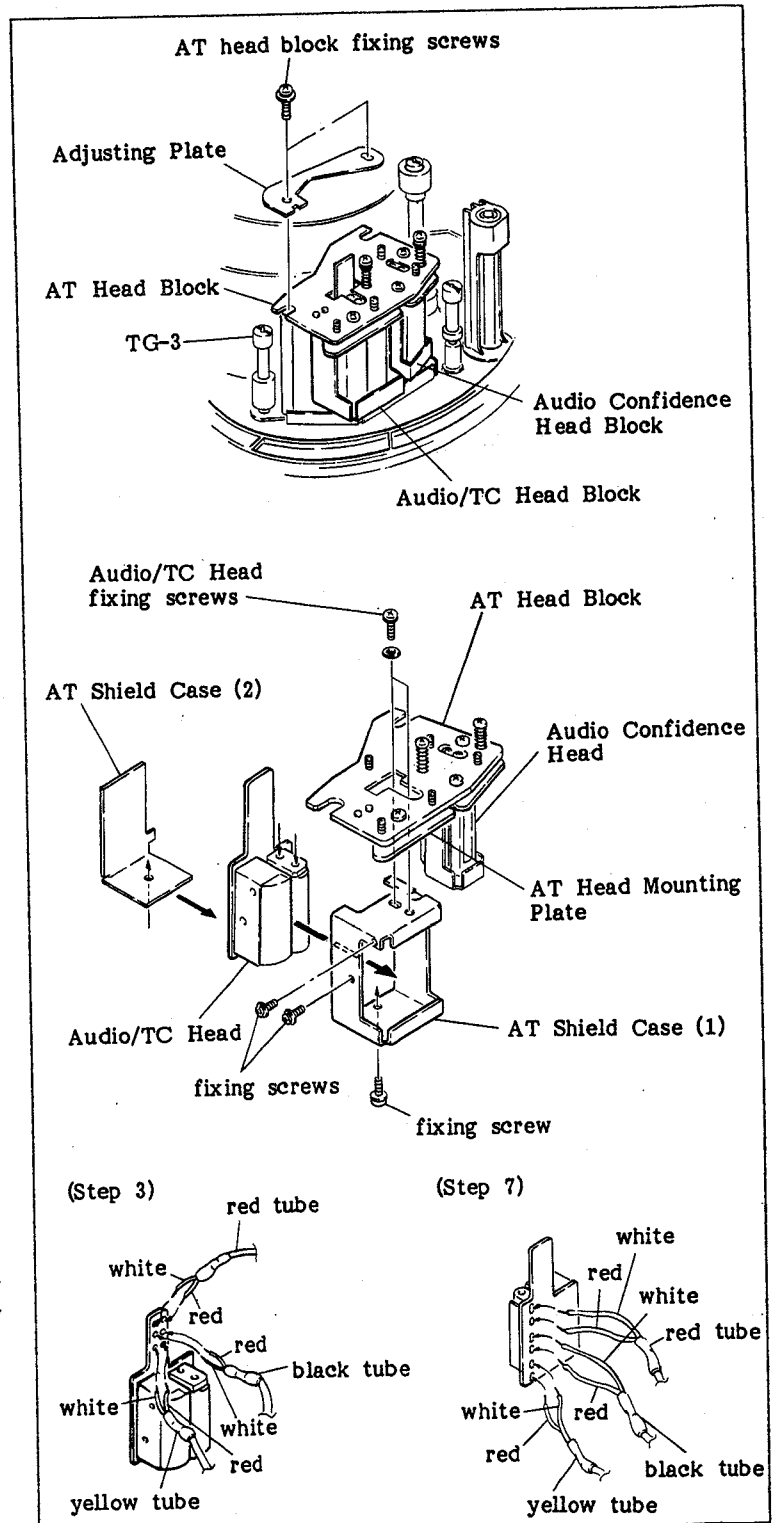
. Perform the preparation as follows:

#### (i) AU-76P Board

Turn DIP switches S101-Bit 1, S102-Bit 1, S201-Bit 1 and S202-Bit 1 to ON. Turn Bits 2, 3 and 4 of these switches to OFF.

#### (ii) AU-76P Board

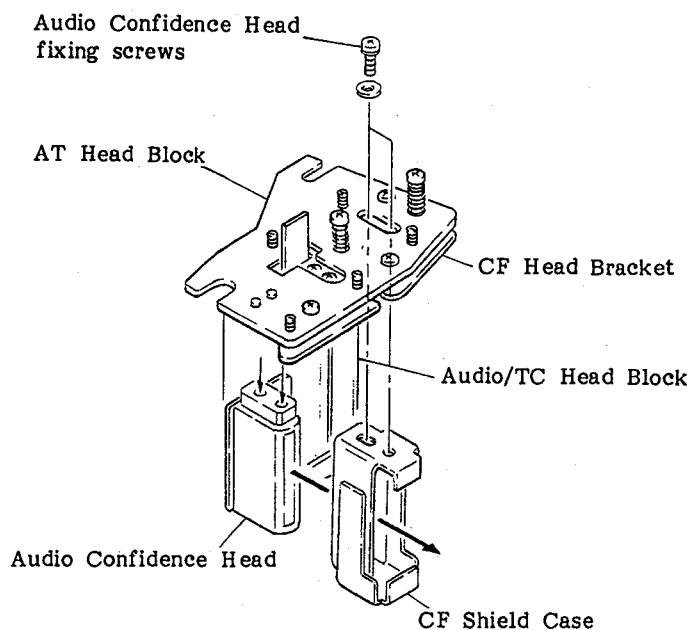
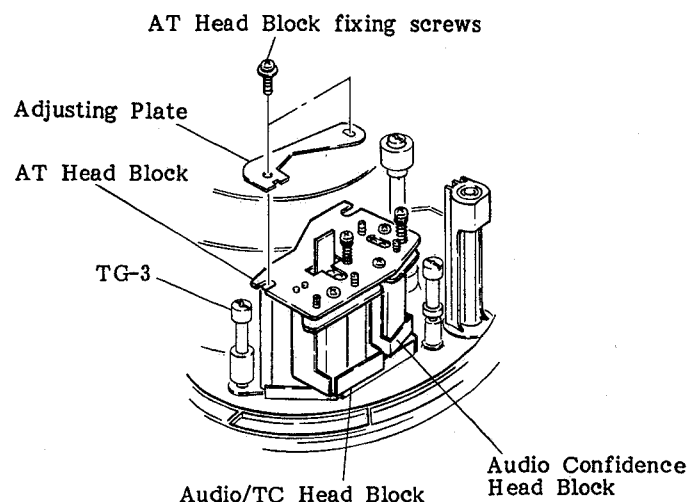
Turn RV101, RV110, RV201 and RV210 clockwise as far as they will go.



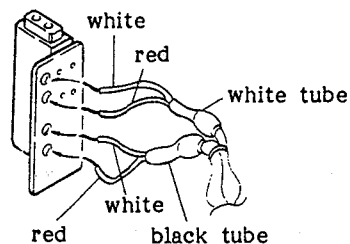
## 5-12. REPLACEMENT OF THE AUDIO CONFIDENCE HEAD

### Replacement procedure:

- (1) Remove the Cleaning Roller Block.
  - (2) Remove the two fixing screws of the AT Head Block, then remove the AT Head Block from the unit.
  - (3) Remove the two fixing screws as shown in the figure, then remove the Audio Confidence Head Block from the AT Head Block. (At this time, the CF Shield Case is removed, too.)
  - (4) Unsolder the four leads on the board of the Audio Confidence Head.
  - (5) Replace the Audio Confidence Head with a new one.
  - (6) Solder the four leads on the board.
  - (7) Insert the Audio Confidence Head into the Shield Case, then install it on the CF Head Bracket with the two fixing screws and the two washers while pushing in the direction of the arrow.
  - (8) Install the Audio Confidence Head in the reverse order of Steps (1) and (2).
  - (9) After replacement, perform the adjustments in Section 5-23.
- . Perform the preparation as follows:
- (i) AU-76P Board  
Turn DIP switches S101-Bit 1, S102-Bit 1, S201-Bit 1 and S202-Bit 1 to ON. Turn Bits 2, 3 and 4 of these switches to OFF.
  - (ii) AU-76P Board  
Turn RV101, RV110, RV201 and RV210 clockwise as far as they will go.



(Step 4)

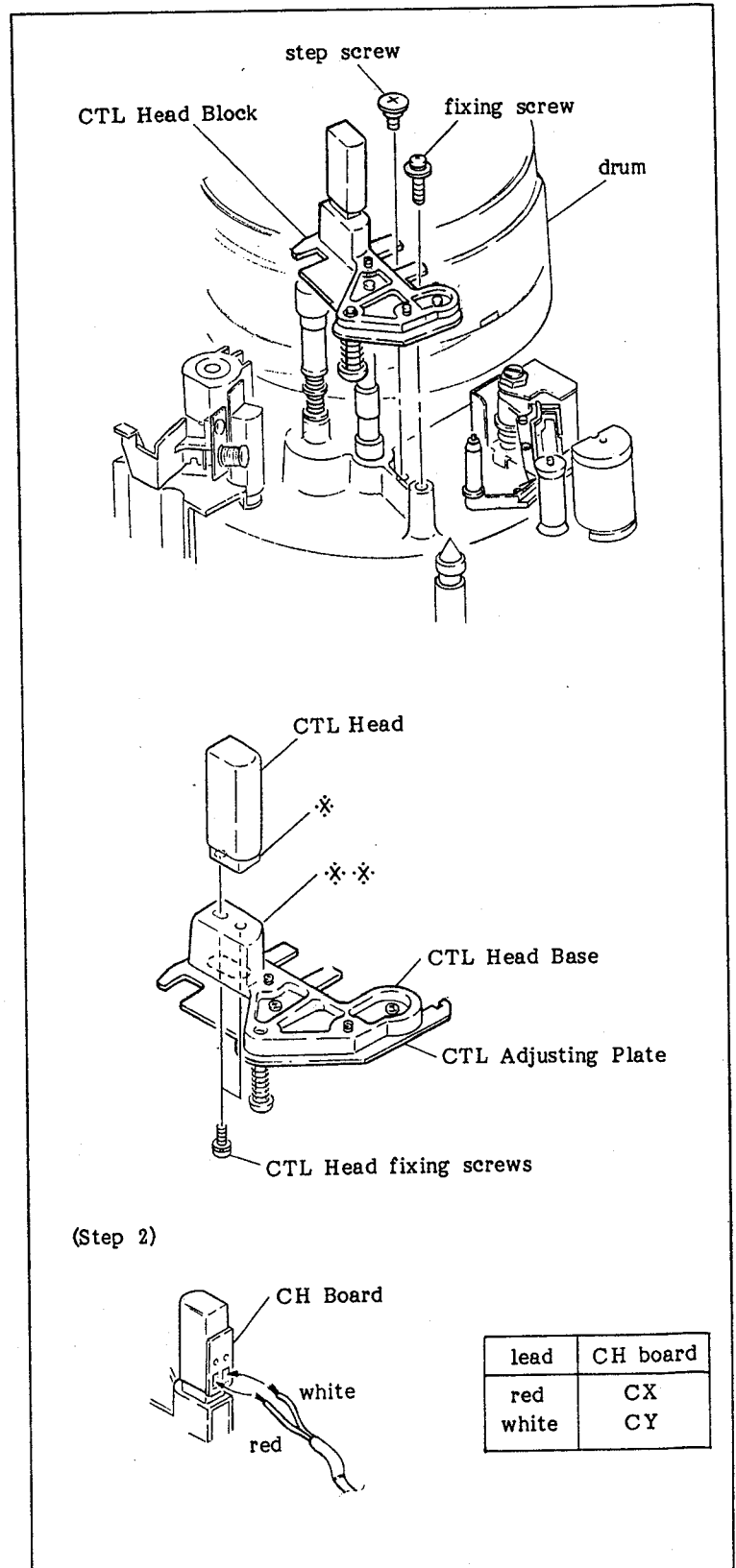


### 5-13. REPLACEMENT OF THE CTL HEAD

**Mode:** Unthreading end mode

**Replacement procedure:**

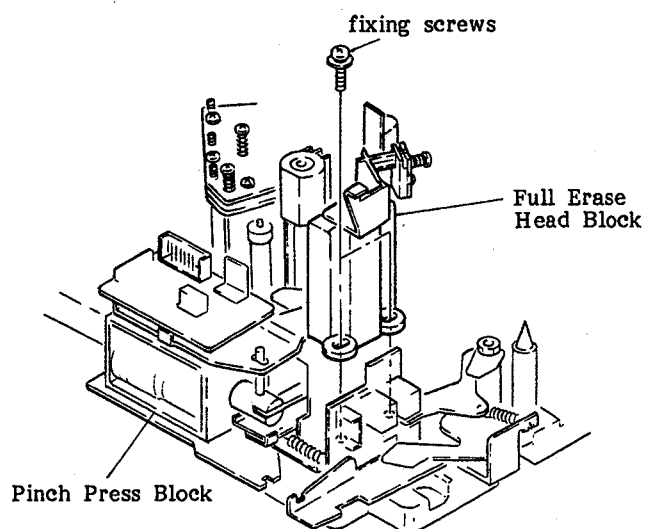
- (1) Remove the fixing screw and step screw as shown in the figure, remove the CTL Head Block from the unit.
- (2) Unsolder the two leads on the CH Board of the CTL Head.
- (3) Remove the two fixing screws from the CTL Head.
- (4) Replace the CTL Head with a new one. (Install the new CTL Head so that the ※ marked portion of the CTL Head is parallel with the ※※ marked portion of the CTL Head Base.)
- (5) Install the CTL Head in the reverse order of Steps (1) to (3).
- (6) After replacement, perform the adjustments in Section 5-23.



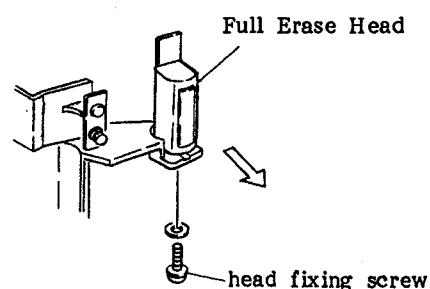
## 5-14. REPLACEMENT OF THE FULL ERASE HEAD

### Replacement procedure:

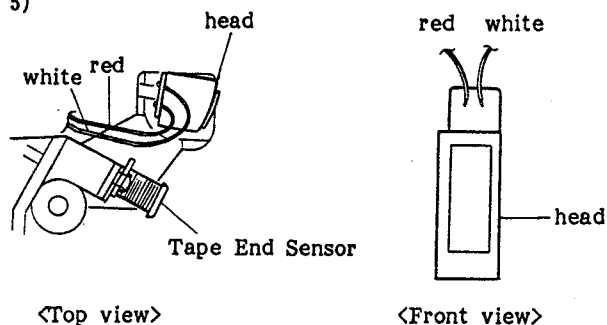
- (1) Remove the two fixing screws as shown in the figure, then remove the Full Erase Head Block from the unit.
- (2) Unsolder the two leads on the FE Board of the Full Erase Head.
- (3) Remove the fixing screw of the Full Erase Head in the lower portion.
- (4) Install the new Full Erase Head while pushing the FE Base in the direction of the arrow.
- (5) Install the FE Head Block. Solder the two leads as shown in the figure.



(Step 4)



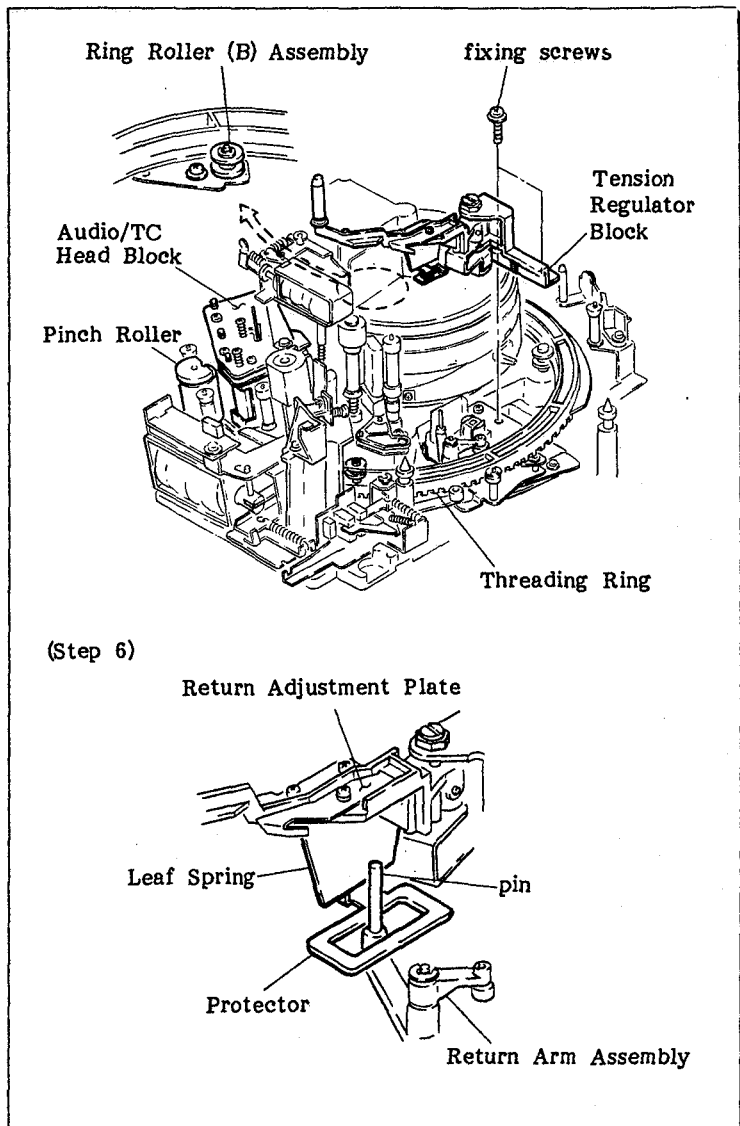
(Step 5)



## 5-15. REPLACEMENT OF THE TENSION REGULATOR BLOCK

### Replacement procedure:

- (1) Loosen the two fixing screws of the Gear Box, release the engagement of the Drive Gear and the Threading Ring.
- (2) Turn the Threading Ring so that the Pinch Roller is placed in front of the Audio/TC Head Block.
- (3) Loosen the fixing screw of the Ring Roller (B), release the hold of the Threading Ring.
- (4) Lightly lift the Threading Ring in front of the Supply Reel Table. Remove the two fixing screws of the Tension Regulator Block as shown in the figure.
- (5) Remove the Return Adjustment Plate, protector, and Leaf Spring from the old Tension Regulator Block. Install them in the new one.
- (6) Install the Tension Regulator Block so that the pin of the Return Arm Ass'y is placed into the hole of the protector as shown in the figure.
- (7) Tighten the Ring Roller (B) to the unit. After replacement, perform the adjustments in Section 5-23.

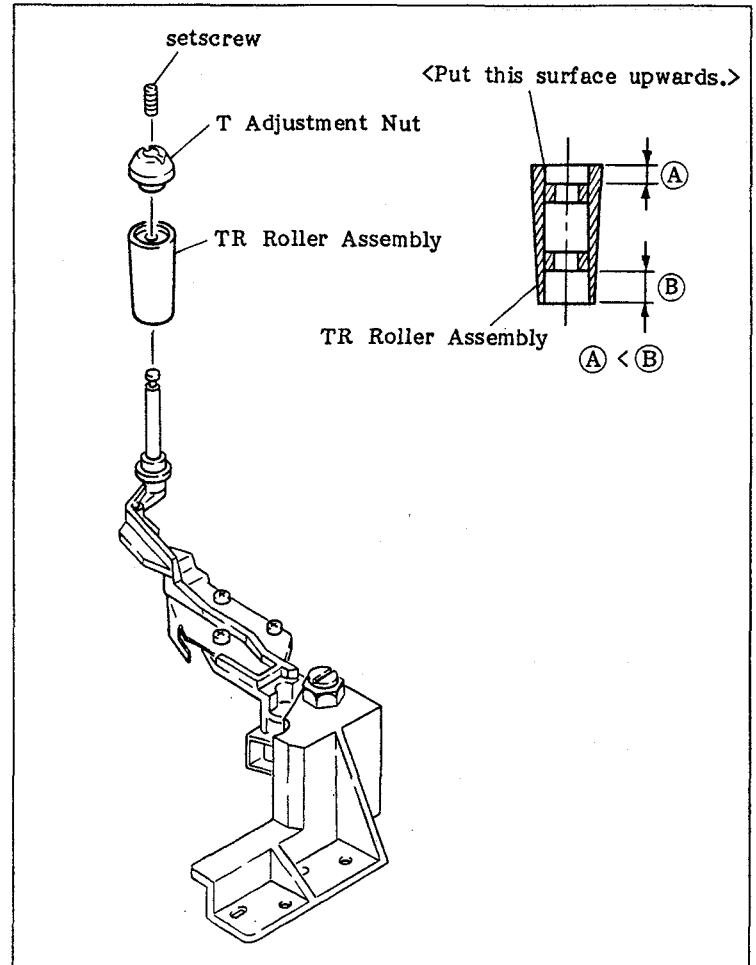


## 5-16. REPLACEMENT OF THE SUPPLY TENSION ROLLER

**Tool:** Hex. key (across flat has 0.9 mm)

### Replacement procedure:

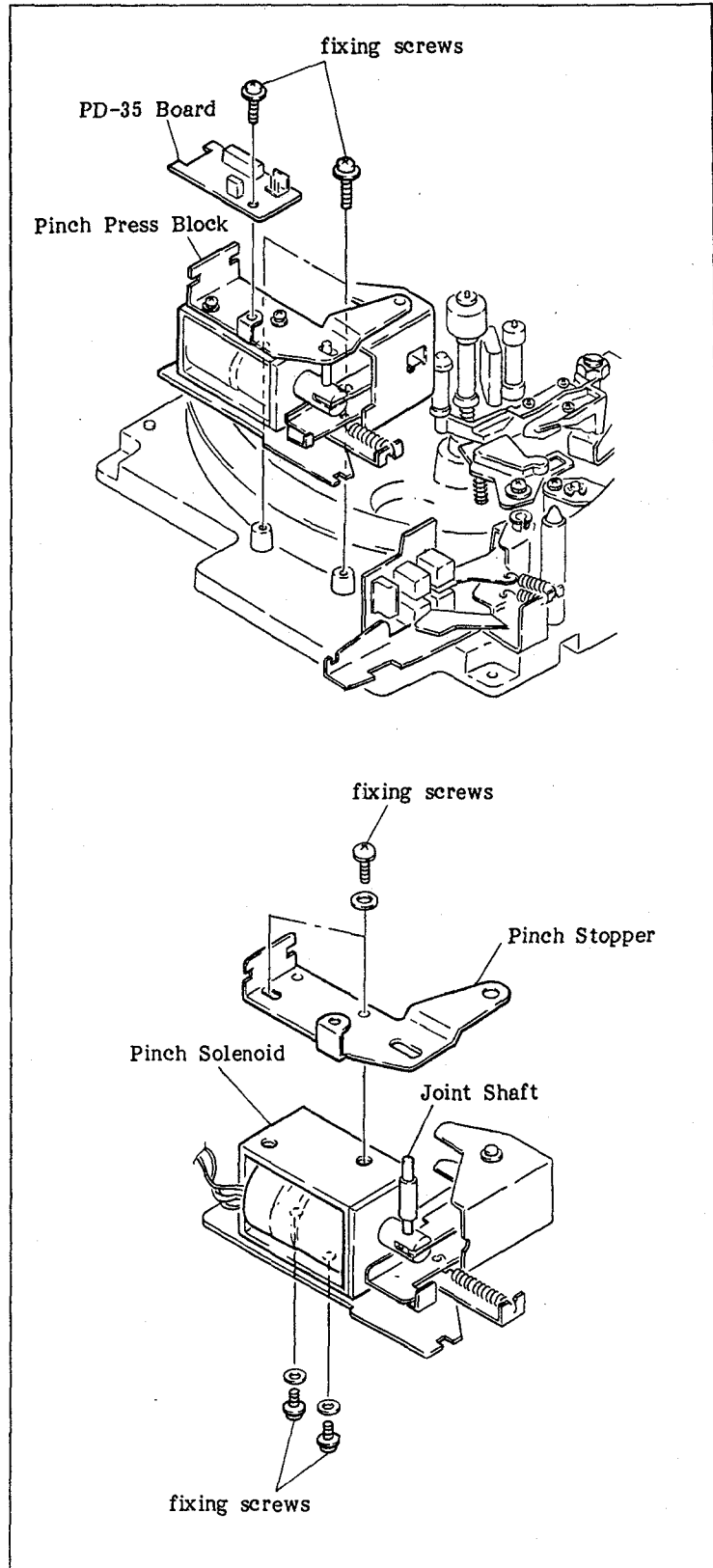
- (1) Remove the setscrew as shown in the figure.
- (2) Turn the T Adjustment Nut, then remove it.
- (3) Remove the TR Roller Ass'y, replace it with a new one.  
NOTE: Before assembling the TR Roller Ass'y, put the TR Roller Ass'y in the direction as shown in the figure.
- (4) After replacement, perform the adjustments in Section 5-23.



## 5-17. REPLACEMENT OF THE PINCH SOLENOID

### Replacement procedure:

- (1) Remove the PD-35 Board from the Pinch Press Block.
- (2) Remove the Pinch Press Block from the unit.
- (3) Remove the two fixing screws as shown in the figure, remove the Pinch Stopper.
- (4) Remove the Joint Shaft.
- (5) Remove the two fixing screws. Remove the Pinch Solenoid, replace it with a new one.
- (6) After replacement, perform the adjustments in Section 5-23.

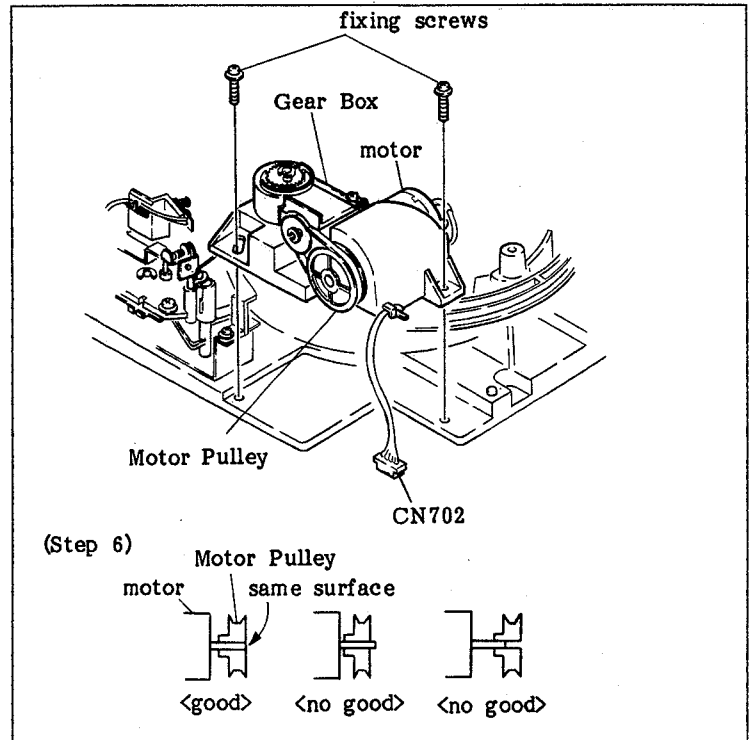


## 5-18. REPLACEMENT OF THE THREADING MOTOR

**Tool:** Hex. key (across flat has 1.27 mm)

### Replacement procedure:

- (1) Disconnect connector CN702 on the SE-57 Board.
- (2) Remove the two fixing screws, then remove the Gear Box from the unit.
- (3) Remove the fixing screw of the Motor Pulley with a hex. key. Remove the pulley and the belt from the Gear Box.
- (4) Unsolder the two leads of the motor.
- (5) Replace the motor with a new one. Solder the gray lead to the "+" terminal and the black lead to the other terminal.
- (6) Install the Motor Pulley so that the end of the Motor Shaft and the Motor Pulley are as shown in the figure.
- (7) Install the Gear Box into the unit. Connect connector CN702 on the SE-57 Board.
- (8) Perform the adjustments in Section 5-23.

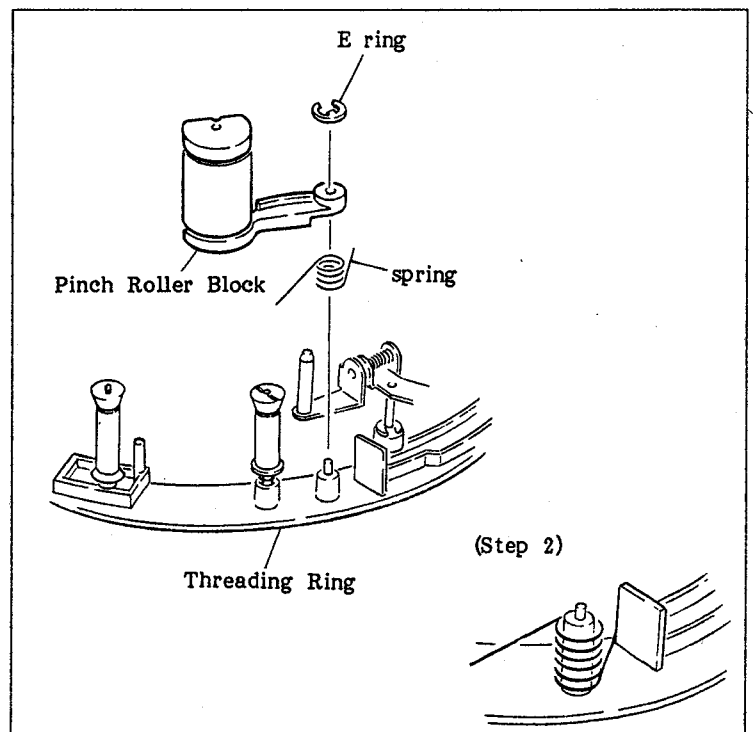


## 5-19. REPLACEMENT OF THE PINCH ROLLER

**Mode:** Unthread end mode (Turn the power OFF.)  
Turn the Motor Pulley of the Gear Box about 5 turns so that the Threading Ring turns a little in the threading direction.

### Replacement procedure:

- (1) Remove the E ring on the Threading Ring as shown in the figure, remove the Pinch Roller Block.
- (2) Hook the spring as shown in the figure, install the new Pinch Roller on the Threading Ring.
- (3) After replacement, perform the adjustments in Section 5-23.

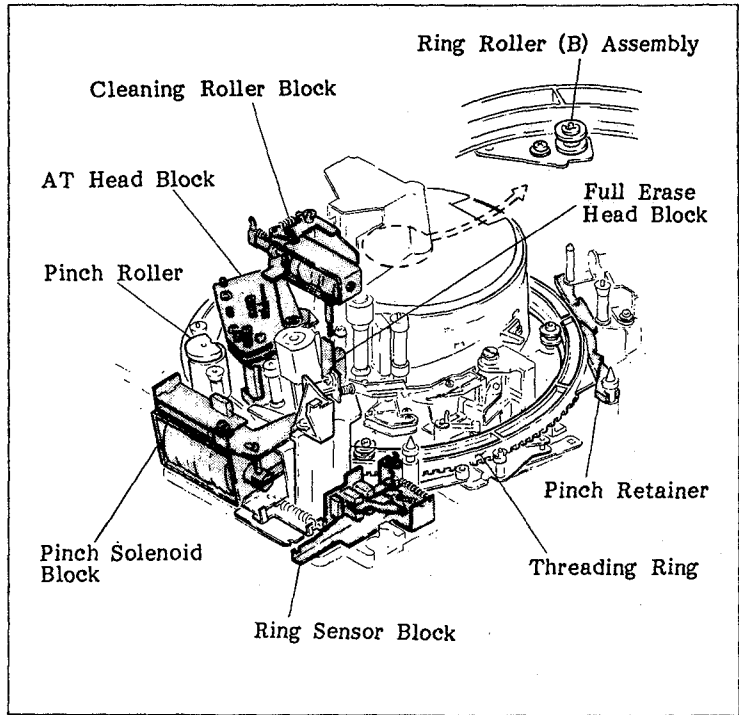




## 5-20. REPLACEMENT OF THE THREADING RING

### Replacement procedure:

- (1) Turn the Gear Box Pulley by hand so that the Pinch Roller is in front of the Audio/TC Head.
- (2) Remove the Pinch Retainer, Full Erase Head Block, Cleaning Roller Block, AT Head Block, Pinch Solenoid Block, and the Ring Sensor Block.
- (3) Disconnect the two connectors on the Slip Ring Block.
- (4) Loosen the fixing screws of the Gear Box, release the engagement of the Drive Gear and the Threading Ring.
- (5) Loosen the fixing screw of the Ring Roller (B), release the hold of the Threading Ring.
- (6) Remove the Threading Ring, replace it with a new one.
- (7) Install the Ring Sensor while turning in the counterclockwise direction.
- (8) Install the Pinch Solenoid Block, AT Head Block, and Full Erase Head Block.
- (9) Insert the two connectors on the Slip Ring Block.
- (10) After replacement, perform the adjustments in Section 5-23.

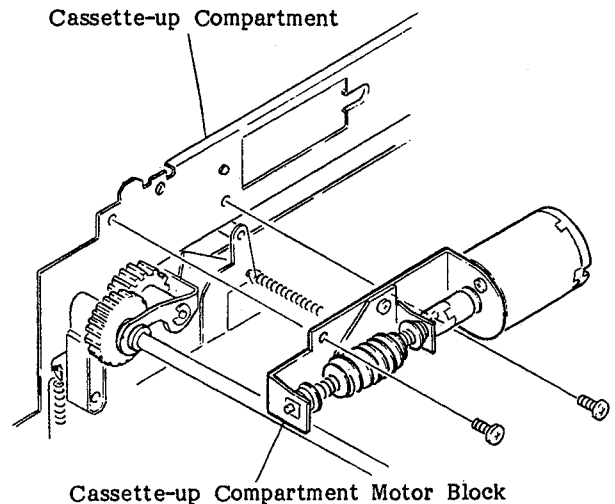


## 5-21. REPLACEMENT OF THE CASSETTE-UP COMPARTMENT WORM GEAR

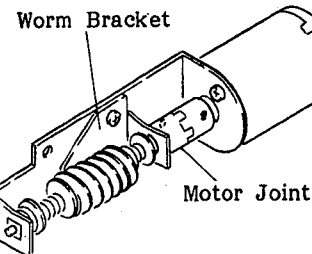
**Tool:** Hex. key (across flat has 1.27 mm)  
DC power (12 V)  
Wire clearance gauge

### Replacement procedure:

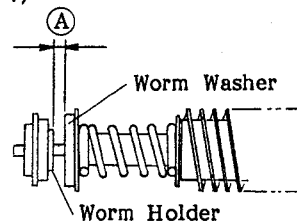
- (1) Remove the Cassette-up Compartment from the unit.
- (2) Disconnect the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (3) Remove the Cassette-up Compartment Motor Block from the Cassette-up Compartment.
- (4) Loosen the fixing screw of the Motor Joint on the Worm Gear Shaft side.
- (5) Remove the motor.
- (6) Remove the Worm Bracket, replace the defective parts with a new one.
- (7) Install the Worm Bracket in the Cassette-up Compartment Motor Block so that the clearance between the Worm Holder and the Worm Washer meets the required specification.
- (8) Insert the Motor Joint into the Worm Gear Shaft, then install it while pushing the Motor Joint in the direction of the Bracket.
- (9) Insert the motor into the Bracket, engaged at two joints.
- (10) Secure the motor to the Bracket.
- (11) Remove the Motor Joint in the motor side so that the clearance between the two joints meets the required specification.
- (12) Supply the 12VDC power to the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (13) Loosen the Worm Mounting Screw about 1/4 turn. Adjust the position of the Worm Bracket with a flatblade screwdriver (3 mm dia.) so that the current reading is minimized.
- (14) Install the Cassette-up Compartment Motor Block to the Cassette-up Compartment Ass'y, connect the connector to the Cassette-up Compartment Motor.



(Step 4)

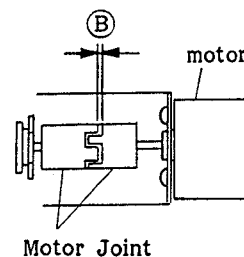


(Step 7)



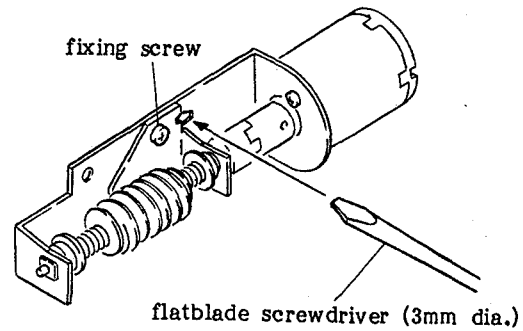
Spec.:  
 $0.1\text{mm} \leq \textcircled{A} \leq 0.3\text{mm}$

(Step 11)



Spec.:  
 $0.5\text{mm} \leq \textcircled{B} \leq 0.8\text{mm}$

(Step 13)



## 5-22. REPLACEMENT OF THE CASSETTE-UP COMPARTMENT MOTOR

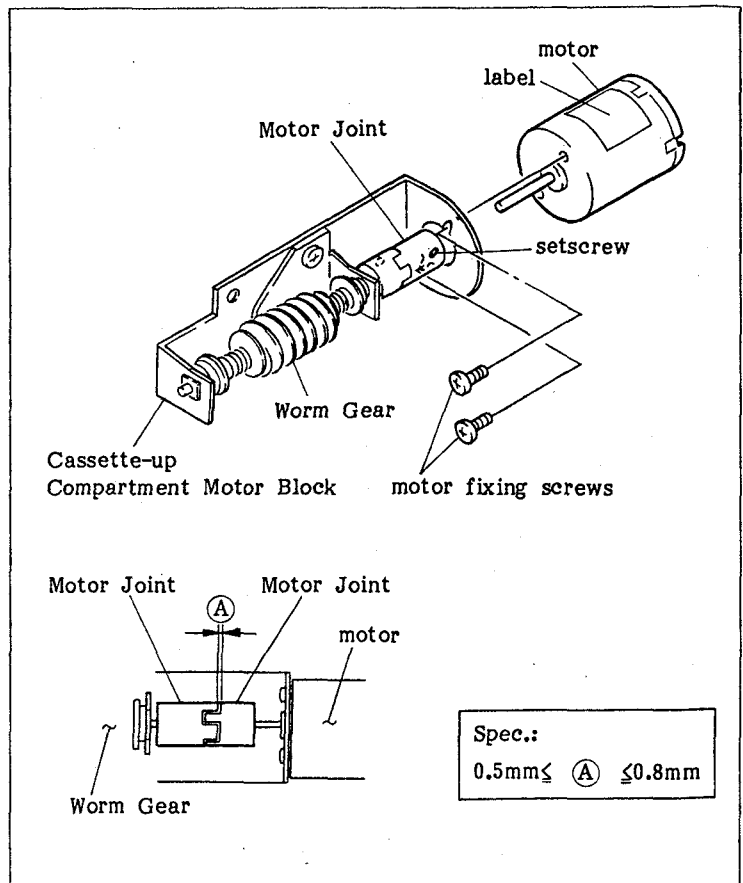
**Tools:** Hex. key (across flat has 1.27 mm)

DC power (12 V)

Wire clearance gauge

### Replacement procedure:

- (1) Disconnect the connector on the CCM-2 Board of the Cassette-up Compartment Motor.
- (2) Remove the Cassette-up Compartment Motor Block from the Cassette-up Compartment.
- (3) Loosen the fixing screws of the motor, and then remove the motor.
- (4) Thread the Motor Joint snugly but do not tighten to the shaft of the new motor, then insert the Motor Joint into the bracket. (Install it so that the label on the Motor is located as shown in the figure.)
- (5) Adjust the position of the Motor Joint on the motor side so that the clearance between the Motor Joints on the Worm Gear side and the motor side meets the required specification.
- (6) Install the Cassette-up Compartment Motor Block to the Cassette-up Compartment.



## 5-23. ITEMS TO BE ADJUSTED AFTER MAIN PARTS REPLACEMENT

. Numbers in parenthesis refer to Section Nos.

### Replacement of the Reel Motor

Reel Motor Shaft Slantness Adjustment (6-1-3) → Reel Table Height Adjustment (6-1-4) → Reel Rotation Detector Block Position Adjustment (6-1-5) → Reel Table Brake Clearance Adjustment (6-2-1) → Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2) → Reel Torque Adjustment (7-2) → Video Tracking Adjustment (Check) (8-1)

### Replacement of the Reel Table

Reel Table Height Adjustment (6-1-4) → Reel Rotation Detector Block Position Adjustment (6-1-5) → Reel Table Brake Clearance Adjustment (6-2-1) → Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2) → Video Tracking Adjustment (Check) (8-1)

### Replacement of the Motor Plate Assembly

Cassette Holder Height Adjustment (L) (6-1-1) → Cassette Holder Height Adjustment (S) (6-1-2) → Reel Table Height Adjustment (6-1-4) → Reel Rotation Detector Block Position Adjustment (6-1-5) → Reel Table Brake Clearance Adjustment (6-2-1) → Reel Table Brake Release Adjustment (6-2-2) → Supply Brake Torque Adjustment (7-1-1) → Take-up Brake Torque Adjustment (7-1-2) → Reel Torque Adjustment (7-2) → Video Tracking Adjustment (Check) (8-1)

### Replacement of the Reel Table Brake

Reel Table Brake Clearance Adjustment (6-2-1) → Reel Table Brake Release Adjustment (6-2-2) → Supply Brake Torque Adjustment (7-1-1) or Take-up Brake Torque Adjustment (7-1-2)

### Replacement of the Upper Drum

Slip Ring Block Brush Position Adjustment (8-6) → Video Tracking Adjustment (8-1) → CTL Head Position Adjustment (8-4-3) → Audio/TC Head Position Adjustment (8-2-5) → Cleaning Roller Position Adjustment (6-9) → R/P Head Y Switching Position Adjustment (10-15) → R/P Head C Switching Position Adjustment (10-16) → REC Drum Lock Phase Adjustment (10-17) → Picture Splitting Compensation Adjustment (10-18) → DT Head Y/C Switching Phase Adjustment (10-19-8) → Video System Adjustment

### **Replacement of the Drum Assembly**

Slip Ring Block Brush Position Adjustment (8-6) → Video Tracking Adjustment (8-1) (Adjust as described in "Tracking Adjustment".) → CTL Head Position Adjustment (8-4-3) → Audio/TC Head Position Adjustment (8-2-5) → Cleaning Roller Position Adjustment (6-9) → R/P Head Y Switching Position Adjustment (10-15) → R/P Head C Switching Position Adjustment (10-16) → REC Drum Lock Phase Adjustment (10-17) → Picture Splitting Compensation Adjustment (10-18) → DT Head Y/C Switching Phase Adjustment (10-19-8) → Video System Adjustment

### **Replacement of the Brush Assembly**

Slip Ring Block Brush Position Adjustment (8-6)

### **Replacement of the Capstan Motor**

Pinch Roller Press Block Position Adjustment (6-6) → Video Tracking Adjustment (8-1)

### **Replacement of the Audio/TC Head Block**

Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Video Tracking Adjustment (Check) (8-1) → Audio/TC Head Position Adjustment (8-2-5) → Audio Confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Audio System Adjustment → Time Code System Adjustment → Cleaning Roller Position Adjustment (6-9)

### **Replacement of the Audio Confidence Head**

Audio Confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Video Tracking Adjustment (8-1) → Audio/TC Head Position Adjustment (8-2-5) → Audio System Adjustment → Cleaning Roller Position Adjustment (6-9)

### **Replacement of the CTL Head**

CTL Head Azimuth/Zenith Adjustment (8-4-2) → CTL Head Height Adjustment (8-4-1) → Video Tracking Adjustment (8-1) → CTL Head Position Adjustment (8-4-3) → Audio/TC Head Position Adjustment (8-2-5)

#### **Replacement of the Tension Regulator Block**

Threading Ring Rotation Adjustment (6-4) → Gear Box position Adjustment (6-5) → Pinch Roller Press Block Position Adjustment (6-6) → Tension Regulator Arm Position Adjustment (6-3-1) → Tension Regulator Arm Slantness Adjustment (6-3-2) → Tension Sensor Position → Adjustment (6-7) → Tension Sensor Sensitivity Adjustment (6-8) → Video Tracking Adjustment (8-1) → Cleaning Roller Position Adjustment (6-9)

#### **Replacement of the S Tension Roller**

Video Tracking Adjustment (8-1)

#### **Replacement of the Pinch Solenoid**

Pinch Roller Press Block Position Adjustment (6-6)

#### **Replacement of the Capstan Motor**

Pinch Roller Press Block Position Adjustment (6-6) → Servo System Adjustment → Video Tracking Adjustment (8-1)

#### **Replacement of the Threading Motor**

Gear Box Position Adjustment (6-5)

#### **Replacement of the Pinch Roller**

Pinch Roller Press Block Position Adjustment (6-6) → Video Tracking Adjustment (8-1)

#### **Replacement of the Threading Ring**

Threading Rotation Adjustment (6-4) → Gear Box Position Adjustment (6-5) → Pinch Roller Press Block Position Adjustment (6-6) → Audio/TC Head Zenith Adjustment (8-2-2) → Audio/TC Head Height Adjustment (8-2-1) → Audio/TC Head Azimuth Adjustment (8-2-3) → Audio/TC Head Phase Adjustment (8-2-4) → Position Adjustment (8-2-5) → Audio confidence Head Zenith Adjustment (8-3-2) → Audio Confidence Head Height Adjustment (8-3-1) → Audio Confidence Head Azimuth Adjustment (8-3-3) → Audio Confidence Head Phase Adjustment (8-3-4) → Video Tracking Adjustment (8-1) → Cleaning Roller Position Adjustment (6-9)

## SECTION 6

### LINK AND DRIVE SYSTEM ALIGNMENT

#### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel. The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

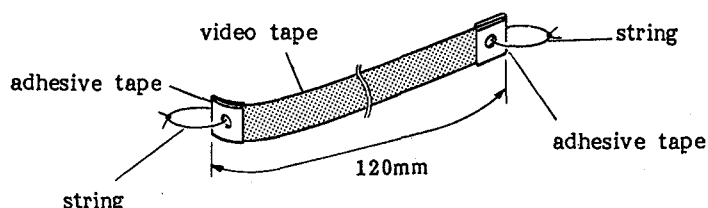
- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

##### REV mode without tape

- (1) Put the unit into the STOP mode without a cassette tape.
- (2) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

### Creating the locally-produced-tape

- (1) Prepare a 12cm-long video tape (used out tape is acceptable).
- (2) As shown in the figure, attach adhesive tape across the video tape and make holes in it.
- (3) Make a 10cm-long loop of string through the holes.



#### \* Item 902

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.

## 6-1. REEL TABLE SYSTEM ADJUSTMENT

### 6-1-1. Cassette Holder Height Adjustment (L)

**Tool:** Cassette reference plate (L)  
Hex. key (across flat has 1.5 mm)  
Thickness gauge

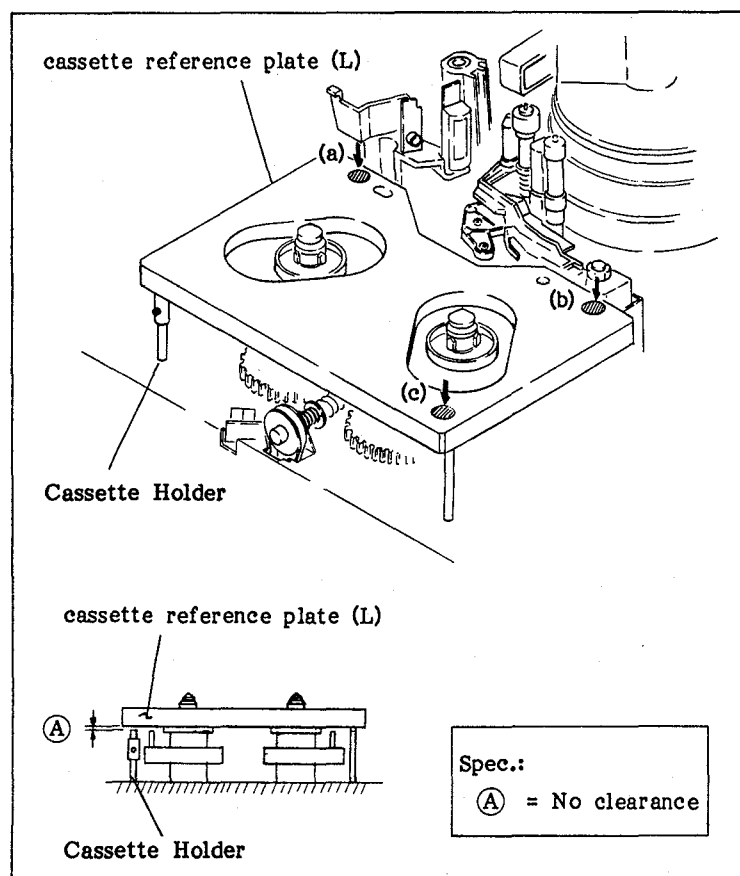
**Mode:** Unthreading end mode

#### Check procedure:

- (1) Install the cassette reference plate (L) at the position for the cassette.
- (2) While lightly pushing the cassette reference plate (L) marked (a), (b), and (c) toward the chassis, check that the clearance between the cassette reference plate (L) and the Cassette Holder meets the required specification.

#### Adjustment procedure:

- (1) Adjust the height of the Cassette Holder to meet the required specification.





## 6-1-2. Cassette Holder Height Adjustment (S)

- . It is required that Section 6-1-1, Cassette Holder Height Adjustment (L) is completed before initiating this adjustment.

**Tool:** Cassette reference plate (L)  
Hex. key (across flat has 1.5 mm)  
Inspection mirror

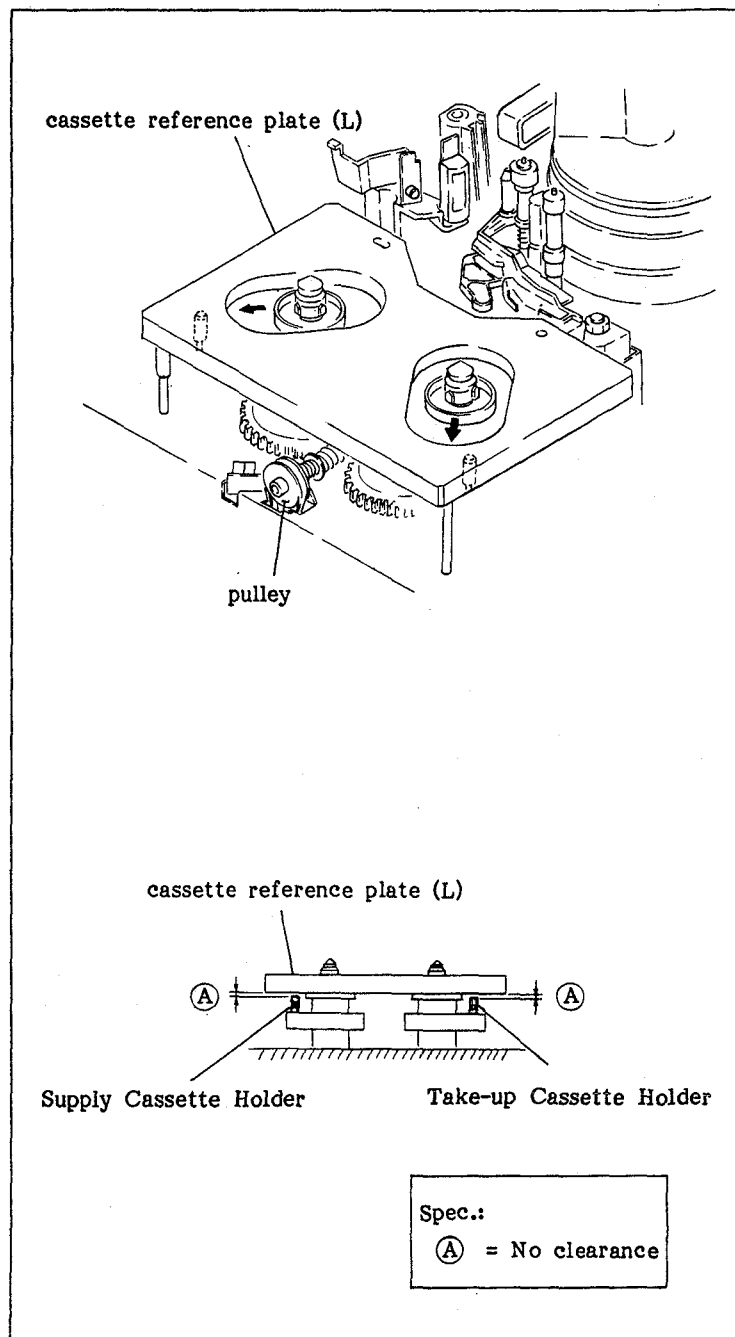
**Mode:** Unthreading end mode

### Check procedure:

- (1) Install the cassette reference plate (L) at the position for the cassette.
- (2) Turn the pulley by hand so that the Reel Table moves to the position as shown in the figure.
- (3) Insert the cassette reference plate (L) in the Take-up Motor Plate Ass'y, check that there is no clearance between the Cassette Holder for the small cassette and the cassette reference plate (L).
- (4) In the Supply Motor Plate Ass'y, check that there is no clearance between the Cassette Holder for the small cassette and the cassette reference plate (L).

### Adjustment procedure:

- (1) Adjust the height of the Cassette Holder so that there is no clearance between the cassette reference plate (L) and the Cassette Holder.



### 6-1-3. Reel Motor Shaft Slantness Adjustment

- . This adjustment is usually not required. Proceed with the following steps only when the Reel Motor is replaced.

**Tool:** Cassette reference plate (L)  
Reel motor shaft slantness check gauge  
Hex. key (across flat has 1.5 mm)  
Thickness gauge

**Mode:** Unthreading end mode

**Check procedure:**

- (1) Put the Reel Block into the L mode.
- (2) Remove the Reel Table as described in replacement procedures (1) to (4) of Section 5-2, Replacement of the Reel Table. (Be careful not to lose the reel table height adjustment poly-slider washer.)
- (3) Install the cassette reference plate (L) at the position for the cassette.
- (4) Check that the clearance between the check gauge and the shaft meets the required specification, when the reel motor shaft slantness check gauge is set on the reel motor shaft from three directions as shown in the figure.
- (5) Put the Reel Block into the S mode.
- (6) Perform as described in procedure (4) again.

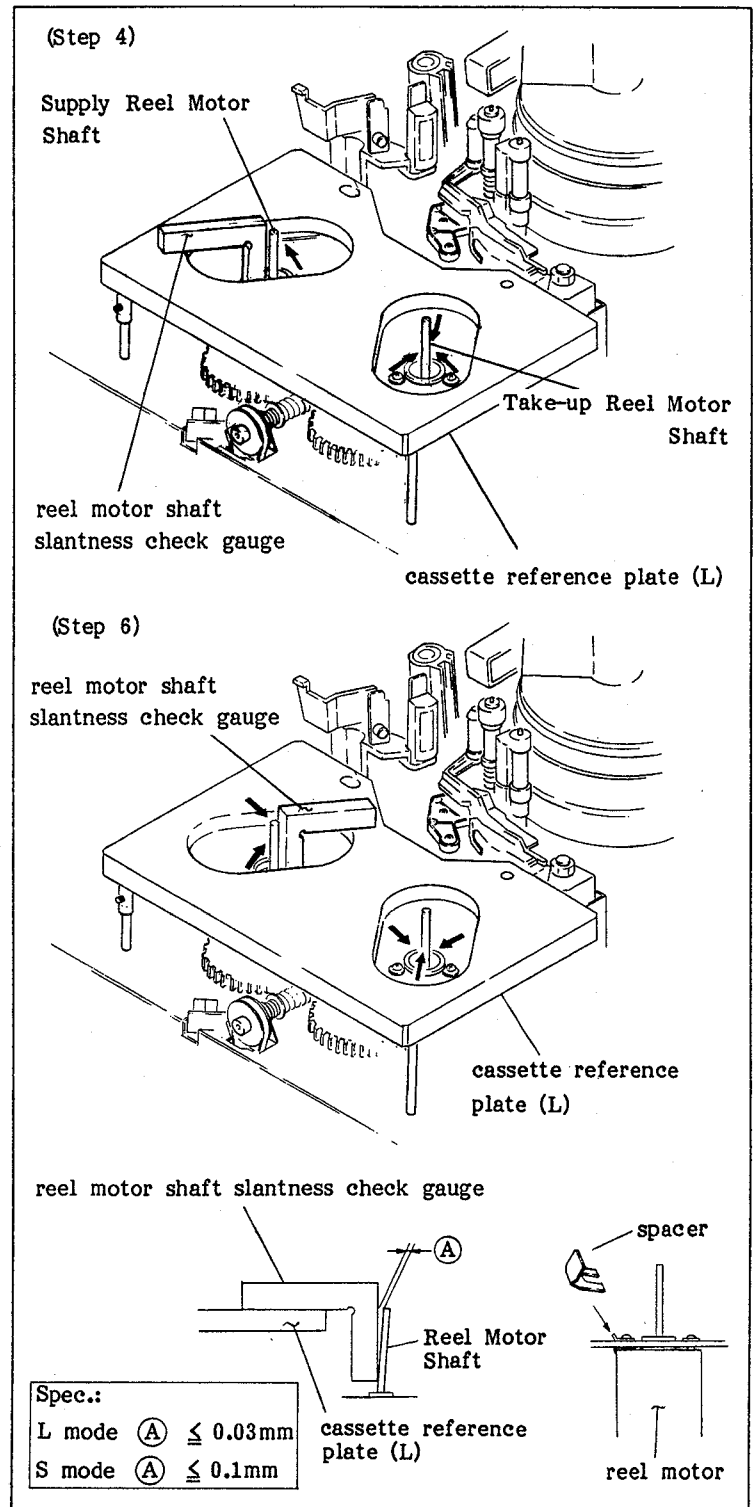
**Adjustment procedure:**

- (1) Insert the reel motor spacer at the reel motor mounting screw as shown in the figure.

**. Reel motor spacer:**

3-717-625-01

- (2) After adjustment, install the Reel Table and perform Section 6-1-4, Reel Table Height Adjustment.



#### 6-1-4. Reel Table Height Adjustment

- . This adjustment is usually not required. Proceed with the following steps when the Reel Motor or Reel Table is replaced.
- . Adjust the Supply Reel Table so that its position is 0.25 mm higher than the position adjusted by the reel table height gauge. Proper tape transport can be then obtained.

**Tool:** Cassette reference plate (L)  
Reel table height gauge  
Hex. key (across flat has 1.5 mm)

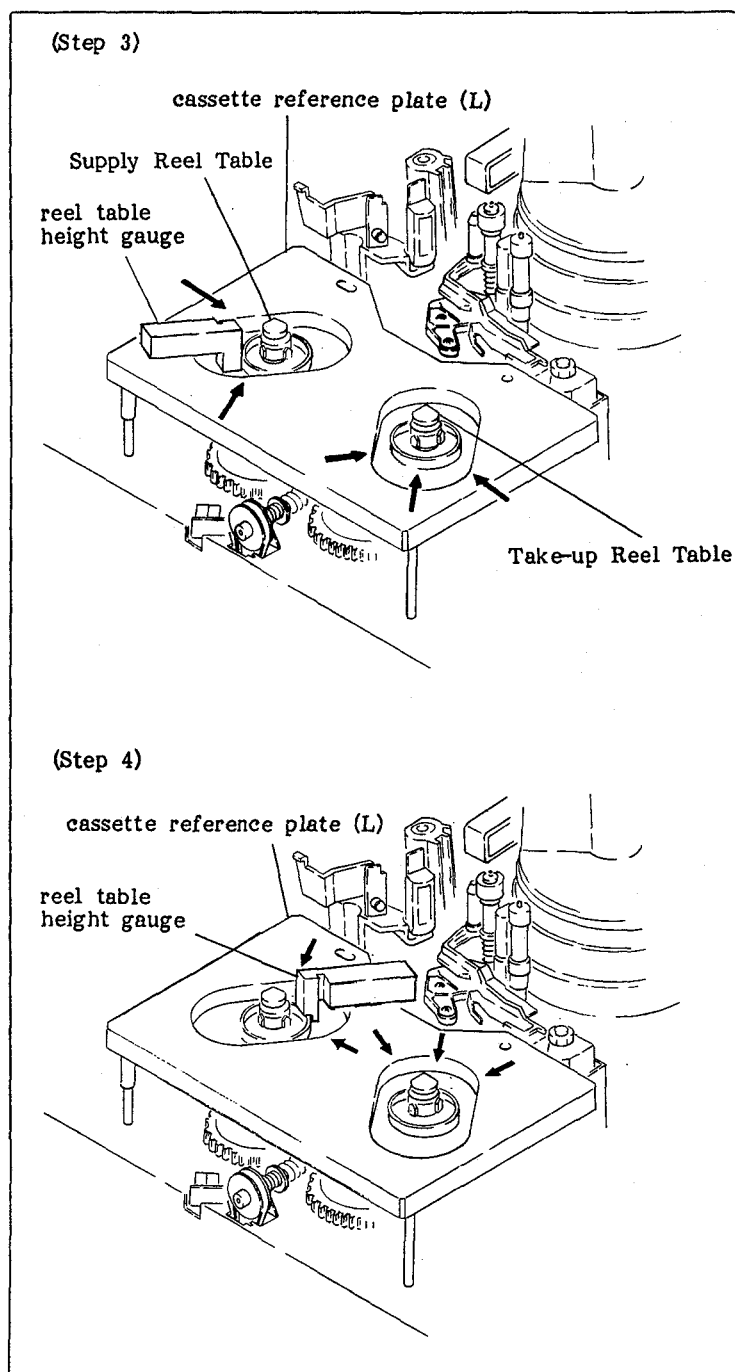
**Mode:** Unthreading end mode

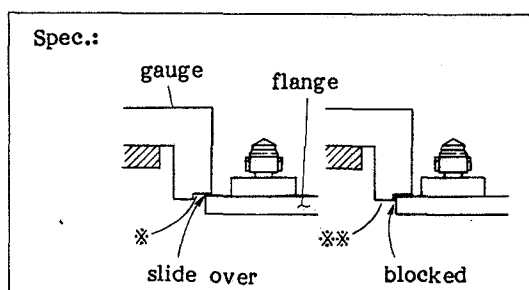
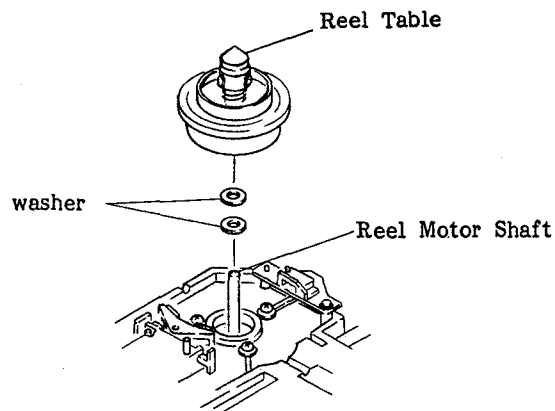
**Adjustment procedure:**

- (1) Put the Reel Block into the L mode.
- (2) Install the cassette reference plate (L) at the position for the cassette.
- (3) Move the reel table height gauge from three directions as shown in the figure. Adjust the height by changing the number of washers under the reel table so that the ※ marked portion of the gauge can slide over the Reel Table, while the ※※ marked portion is against and cannot slide over the Reel Table.
- (4) Put the Reel Block into the S mode.
- (5) After procedures (3) and (4) are completed, insert a poly-slider washer (0.25 mm thick) under the Supply Reel Table.

**Adjustment washer:**

poly-slider washer, 4 mm dia.  
0.13 mm thick      3-701-441-01  
0.25 mm thick      3-701-441-11  
0.5 mm thick        3-701-441-21





#### 6-1-5. Reel Table Rotation Detector Block Position Adjustment

**Tool:** Thickness gauge

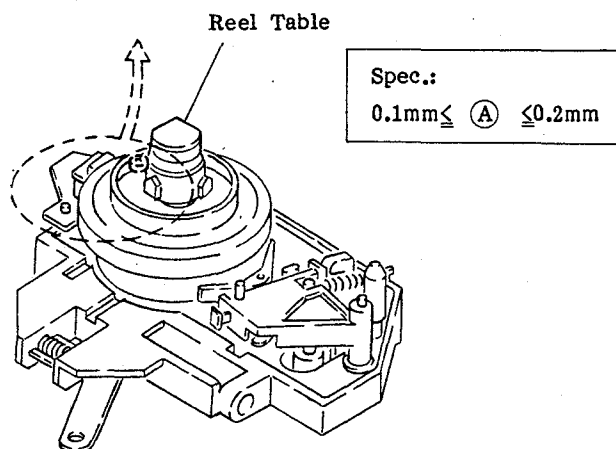
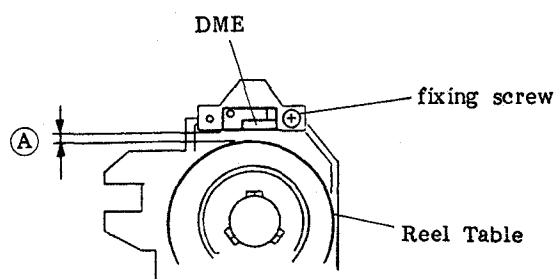
**Mode:** Unthreading end mode (L or S mode)

**Check procedure:**

- (1) Check that the clearance between the Take-up Reel Table/Supply Reel Table and the DME on the Reel Table Rotation Detector meets the required specification.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the Take-up Reel Table Rotation Detector Block.
- (2) Adjust the position of the Reel Table Rotation Detector Block meets the required specification.
- (3) Adjust the position of the Supply Reel Table Rotation Detector Block in the same way.



## 6-2. BRAKE SYSTEM ADJUSTMENT

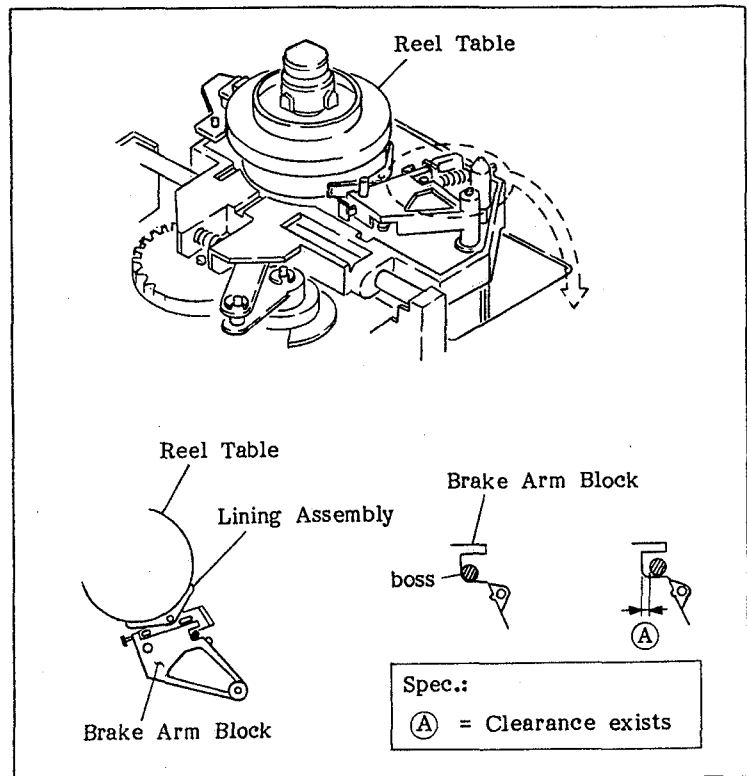
### 6-2-1. Reel Table Brake Clearance Adjustment

#### Check procedure:

- (1) When turning the Take-up Reel Table in the counterclockwise direction by hand, check that the clearance between the Brake Arm Block and the boss exists.
- (2) When turning the Supply Reel Table in the clockwise direction, check that the clearance between the Brake Arm Block and the boss exists.

#### Adjustment procedure:

- (1) Replace the Lining Ass'y as described in Section 5-6, Replacement of the Reel Table Brake.
- (2) Check it again.



### 6-2-2. Reel Table Brake Release Adjustment

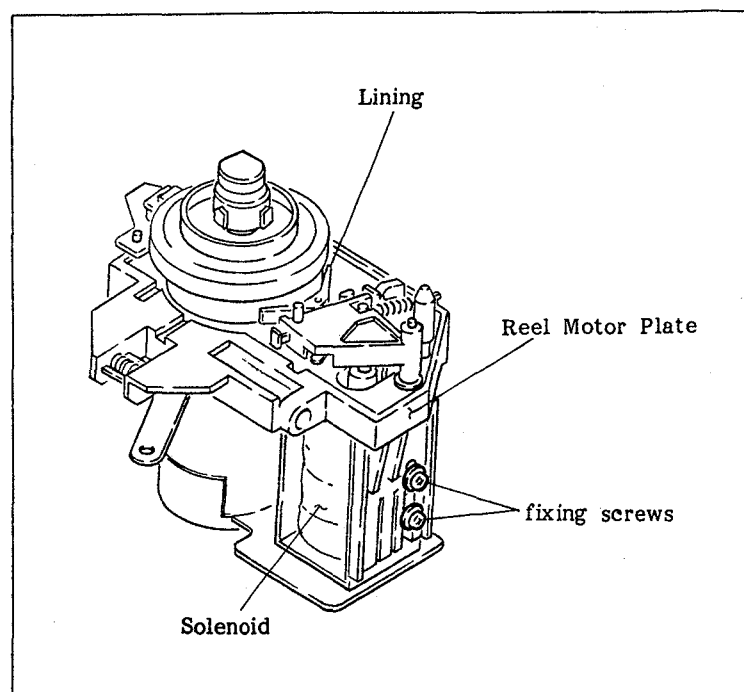
**Mode:** STOP mode (POWER ON)

#### Check procedure:

- (1) Check that the Take-up Reel Lining does not touch the Take-up Reel Table during Take-up Reel Table rotation.
- (2) Check that the Supply Reel Lining does not touch the Supply Reel Table during Supply Reel Table rotation.

#### Adjustment procedure:

- (1) Remove the Reel Motor Plate.
- (2) Loosen the fixing screws of the solenoid.
- (3) Lower the solenoid slight and secure it using the screws.
- (4) Confirm according to the check procedure.
- (5) Install the Reel Motor Plate and perform Section 6-1-2, Cassette Holder Height Adjustment (S); and 6-1-4, Reel Table Height Adjustment.



### 6-3. TENSION REGULATOR SYSTEM ADJUSTMENT

#### 6-3-1. Tension Regulator Arm Position Adjustment

. This adjustment is closely related to the video tracking adjustment and the tension regulator arm slantness adjustment.

After this adjustment, perform Section 8-1, Video Tracking Adjustment; and Section 6-3-2, Tension Regulator Arm Slantness Adjustment.

**Tool:** Tension scale (50 g full scale)  
Wire clearance gauge  
Locally-produced-tape  
(Refer to "alignment information".)

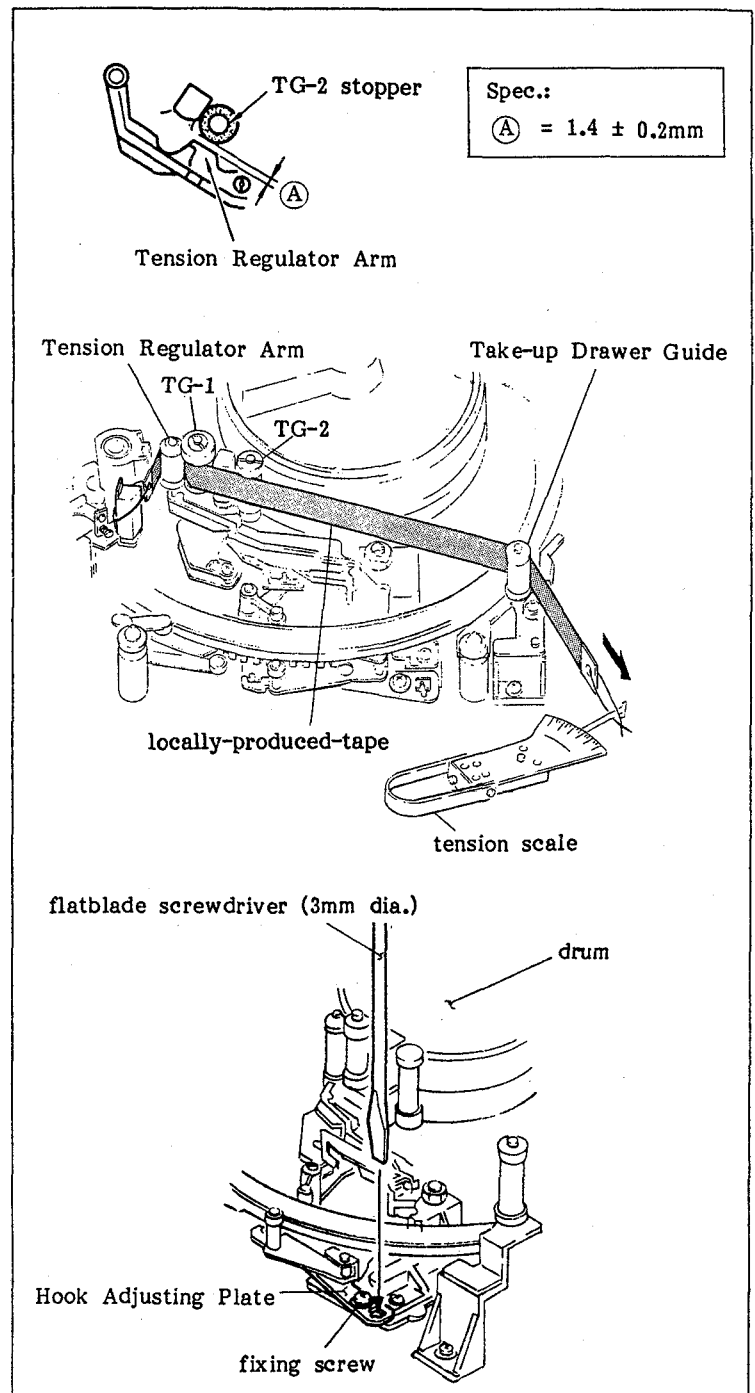
**Mode:** Threading end mode without a cassette.  
(Turn the power OFF.)

**Check procedure:**

- (1) Install the locally-produced-tape as shown in the figure.
- (2) Hook a tension scale to an end of the string. Pull out the tape in the direction of the arrow so that the scale reading is 45 g.
- (3) When the scale reading is 45 g, check that the clearance between the stopper of the Tape Guide (2) and the Tension Regulator Arm meets the required specification.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the Hook Adjustment Plate 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the adjusting hole as shown in the figure, then adjust it to meet the required specification.
- (3) After adjustment, check as described in the check procedures.



### 6-3-2. Tension Regulator Arm Slantness Adjustment

- . This adjustment is closely related to the video tracking adjustment.
- . After this adjustment, perform Section 8-1, Video Tracking Adjustment.

**Tool:** Cassette reference plate (L)  
Tension regulator slantness check tool

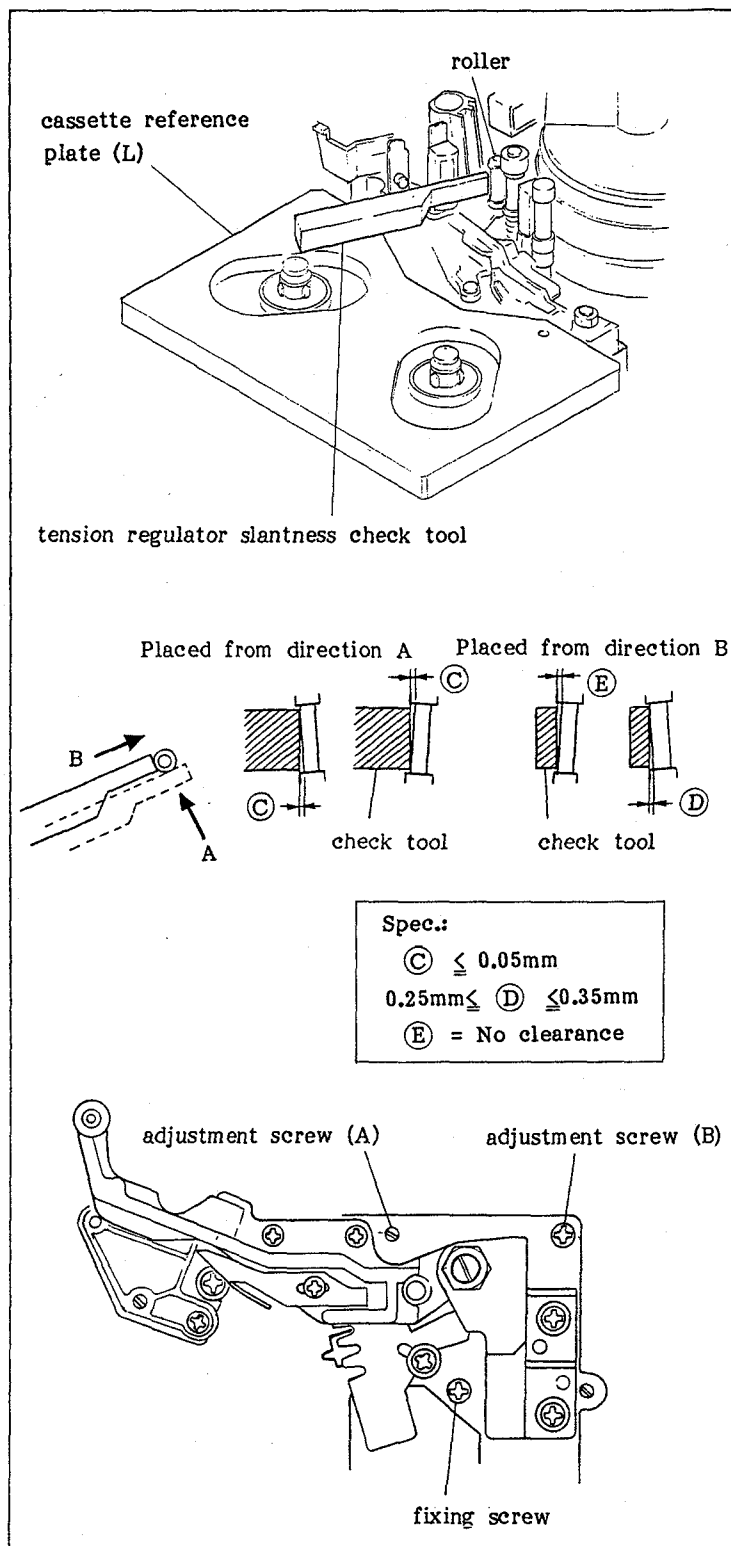
**Mode:** Threading end mode

**Check procedure:**

- (1) Open the RP-29P Boards Block.
- (2) Install the cassette reference plate (L) into the cassette position.
- (3) Place the tension regulator slantness check tool against the Tension Regulator Roller. Check that the slantness of the roller meets the required specification viewed from the direction of arrows A and B as shown in the figure.

**Adjustment procedure:**

- . When the slantness is out of spec. (placed from the direction of arrow A).
- (1) Loosen the fixing screw 1/2 to 1 turn.
  - (2) Adjust the slantness with the adjustment screws (A) and (B).
  - (3) Tighten the fixing screw and check again.
  - (4) After adjustment, perform the Step (8).
- . When the slantness is out of spec. (placed from the direction of arrow B).
- (5) Loosen the fixing screw 1/2 to 1 turn.
  - (6) Adjust the slantness with the adjustment screw (B).
  - (7) Tighten the fixing screw and check again.
  - (8) After adjustment, perform Section 6-3-1, Tension Regulator Arm Position Adjustment; Section 8-1, Video Tracking Adjustment.



#### 6-4. THREADING RING ROTATION ADJUSTMENT

- . This adjustment is required only when the Threading Ring or Ring Roller (B) Ass'y is replaced or removed.

**Mode:** Turn the power OFF while rotating the Threading Ring 180 degrees from unthreading end state.

**Check procedure:**

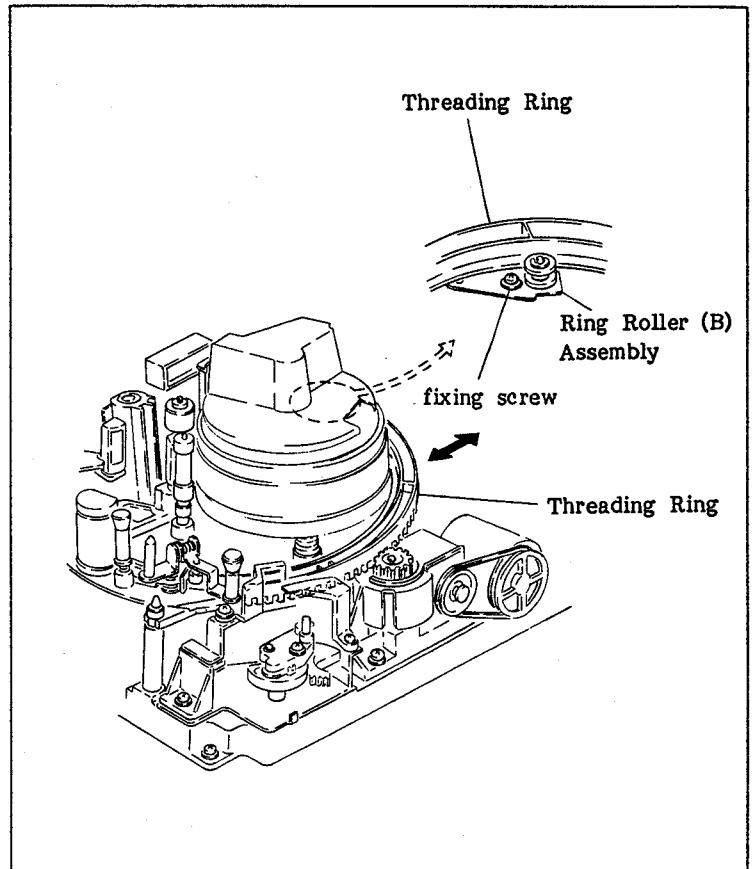
- (1) Open the RP-29P Boards Block.
- (2) Check that the horizontal play meets the required specification when the Threading Ring is pushed in the direction of the arrow by hand.
- (3) Check that the rotation of the Threading Ring into the threading and unthreading modes is smooth.

**Adjustment procedure:**

- (1) Loosen the fixing screw of the Ring Roller (B) Ass'y 1/2 to 1 turn.
- (2) Adjust the position of the Ring Roller (B) Ass'y to meet the required specification.

**Adjusting procedure:**

- . Insert a 0.3 mm thick piece of paper between the Threading Ring and the Ring Roller.
- . The paper of this manual is about 0.1 mm thick so that three pages are 0.3 mm thick.





## 6-5. GEAR BOX POSITION ADJUSTMENT

. It is required that Section 6-4, Threading Ring Rotation Adjustment is correct before initiating this adjustment.

**Tool:** Wire clearance gauge

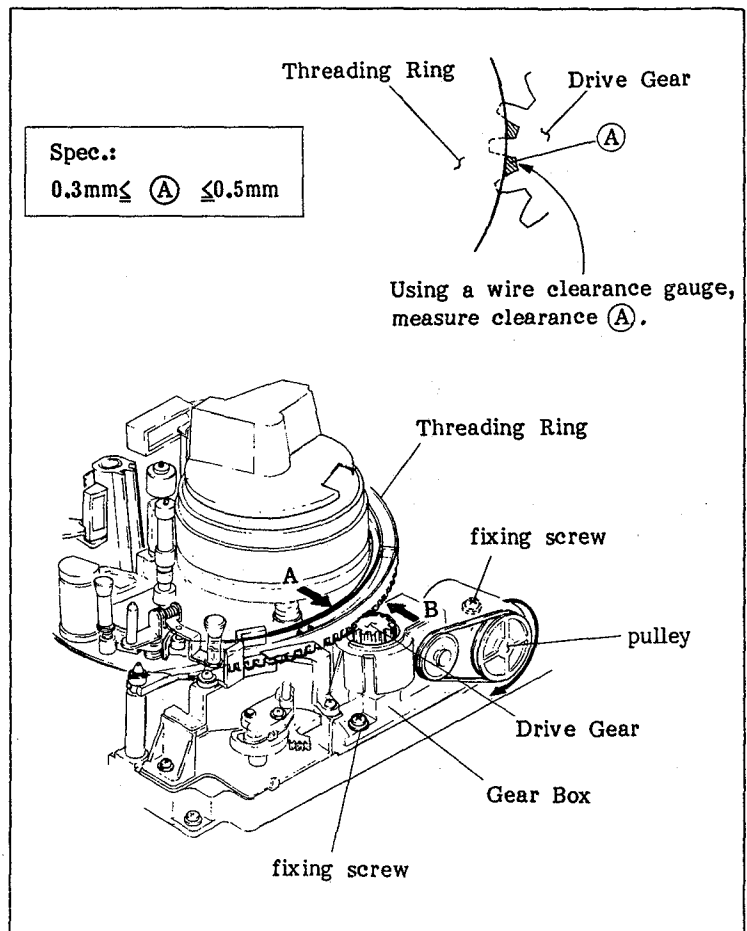
**Mode:** Unthreading end mode

### Check procedure:

- (1) Open the RP-29P Boards Block.
- (2) Turn the pulley of the Gear Box by hand about 90 degrees in the direction of the arrow.
- (3) When pushing the Threading Ring in the direction of arrow (B) by hand, check that the clearance between the Threading Ring and the Drive Gear of the Gear Box meets the required specification with the wire clearance gauge.

### Adjustment procedure:

- (1) Loosen the fixing screws of the Gear Box 1 to 2 turns.
- (2) Press the Threading Ring in the direction of arrow (A), while lightly pushing the Drive Gear of the Gear Box against the Threading Ring.
- (3) Tighten the fixing screws of the Gear Box.
- (4) After adjustment, check as described in the check procedures.



## 6-8. TENSION SENSOR SENSITIVITY ADJUSTMENT

It is required that Section 6-7, Tension Sensor Position Adjustment is correct before initiating this adjustment.

**Tool:** Digital multimeter  
Tension scale (50 g full scale)  
Locally-produced-tape  
(Refer to "alignment information".)

**Mode:** STANDBY OFF mode without a cassette tape

### Preparation:

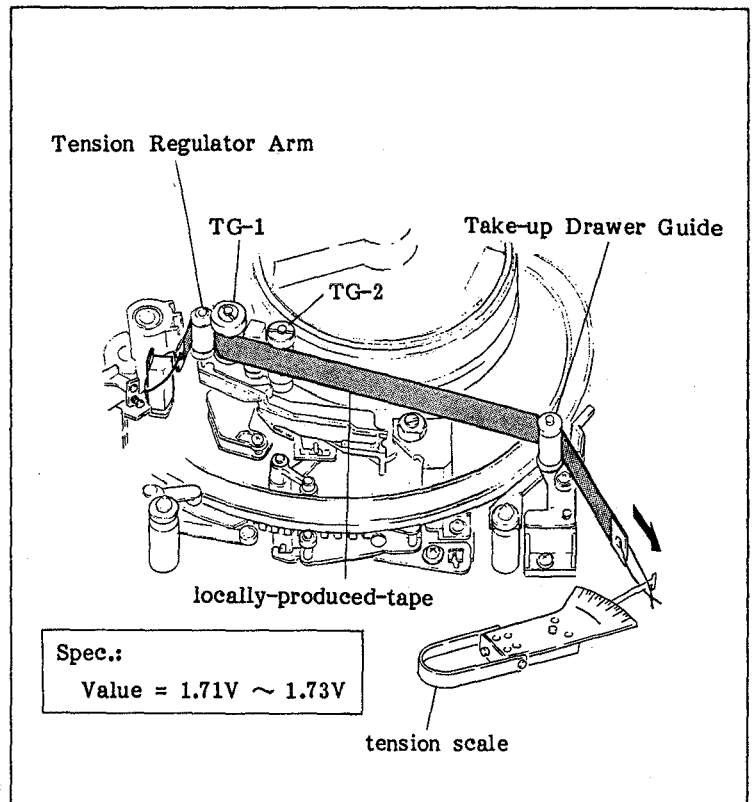
- (1) Extend the SV-83 Board with an Extension Board.
- (2) Connect the digital multimeter to TP3 on the SV-83 Board.

### Check procedure:

- (1) Install a locally-produced-tape as shown in the figure.
- (2) Hook a tension scale to an end of the string. Pull the tape in the direction of the arrow so that scale reading is 25 g.
- (3) When the scale reading is 25 g, check that the reading of the digital multimeter meets the required specification.

### Adjustment procedure:

- (1) Adjust RV3 on the SV-83 Board to meet the required specification.
- (2) After adjustment, check that it meets the required specification again.



## 6-7. TENSION SENSOR POSITION ADJUSTMENT

**Tool:** Digital multimeter

Tension scale (50 g full scale)

Locally-produced-tape

(Refer to "alignment information".)

**Mode:** STANDBY OFF mode without a cassette tape

### Preparation:

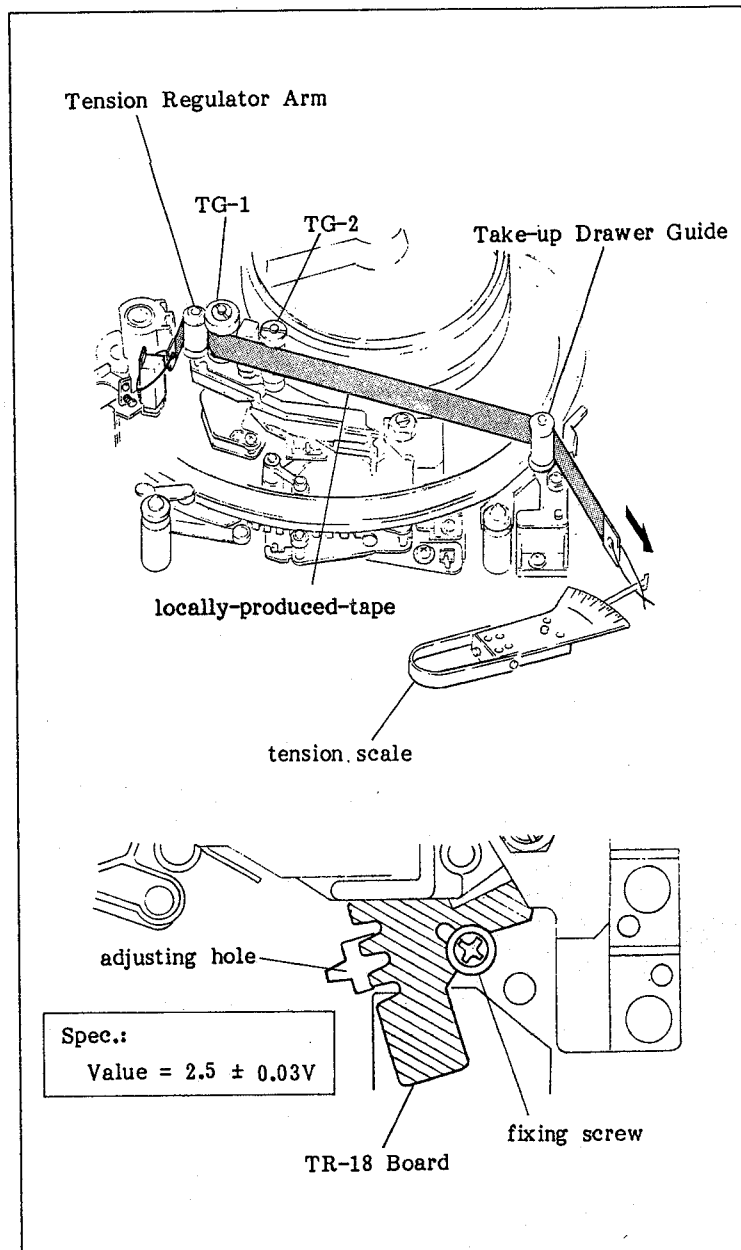
- (1) Extend the SV-83 Board with an Extension Board.
- (2) Connect the digital multimeter to TP3 on the SV-83 Board.

### Check procedure:

- (1) Install the locally-produced-tape as shown in the figure.
- (2) Hook a tension scale to an end of the string. Pull the tape in the direction of the arrow so that scale reading is 45 g.
- (3) When the scale reading is 45 g, check that the reading of the digital multimeter meets the required specification.

### Adjustment procedure:

- (1) Loosen the fixing screw of the TR-18 Board about 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the adjustment hole, then adjust the position of the TR-18 Board to meet the required specification.
- (3) Tighten the fixing screw, check that it meets the required specification again.
- (4) After adjustment, perform Section 6-8, Tension Sensor Sensitivity Adjustment.



## 6-9. CLEANING ROLLER POSITION ADJUSTMENT

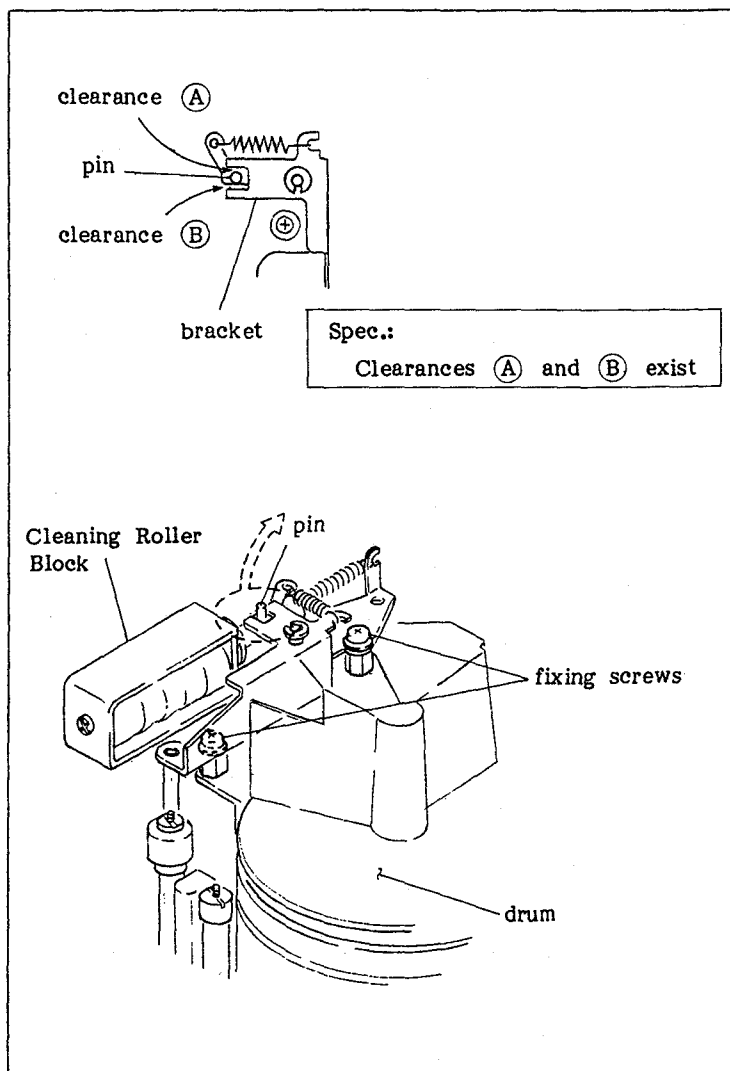
**Mode:** Unthreading end mode

### Check procedure:

- (1) Turn the power ON, short between TP-1 on the PD-35 Board and the chassis with a shorting clip.
- (2) Check that the clearance between the Cleaning Roller Block Pin and the bracket meets the required specification.
- (3) Insert the cassette tape in F.FWD mode. Check that the clearance between the pin and the bracket meets the required specification.
- (4) If the specification is met, remove the shorting clip. (If the shorting clip is shorting for a long time, the internal fuse of the Cleaning Roller Solenoid will be blown.)

### Adjustment procedure:

- (1) Loosen the two fixing screws of the Cleaning Roller Block and adjust the position to meet the required specification as described in procedure (1).
- (2) Check as described in the check procedure (3).
- (3) Remove the shorting clip.





## SECTION 7

# TORQUE ALIGNMENT

### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel.  
The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

#### **REV mode without a cassette tape**

- (1) Put the set into the STOP mode without a cassette tape.
- (2) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

#### **\* Item 902**

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.

## 7-1. BRAKE TORQUE CHECK

### 7-1-1. S Brake Torque Check

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

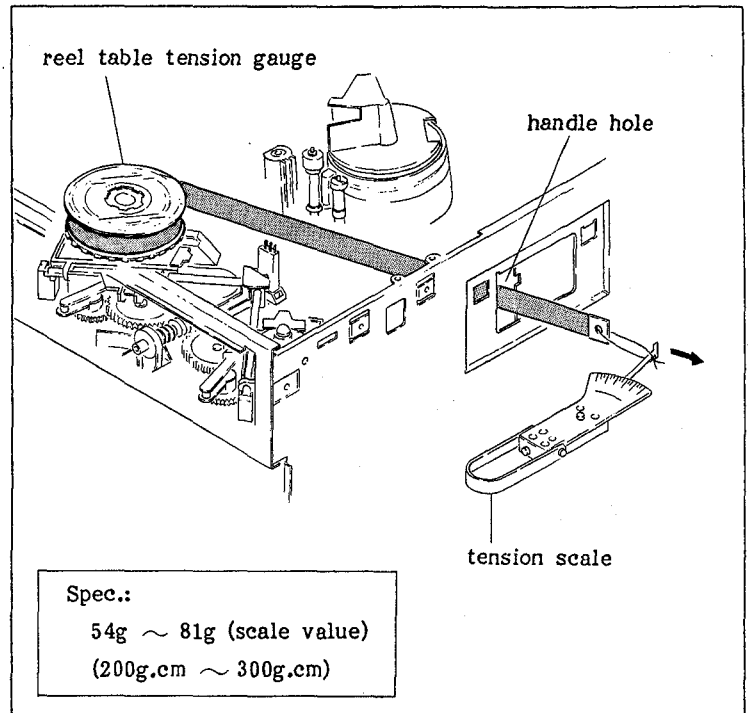
**Mode:** Threading end mode

**Preparation:**

- (1) Remove the handle on the right side.
- (2) Open the RP-29P Boards Block.
- (3) Remove the Tape Beginning Sensor.

**Check procedure:**

- (1) Wind the tape to the reel table tension gauge in the clockwise direction.
- (2) Install the reel table tension gauge on the Supply Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow, check that the scale reading meets the required specification.



### 7-1-2. T Brake Torque Check

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

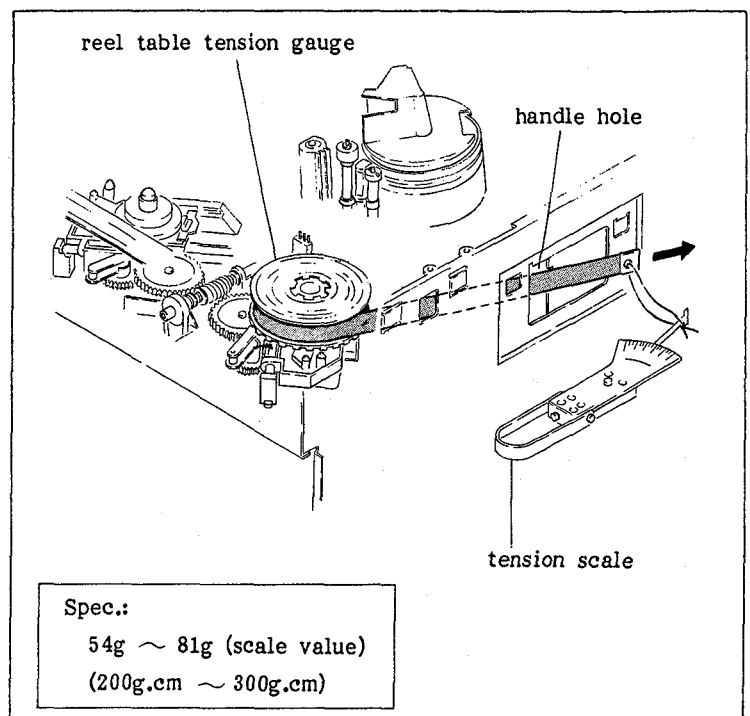
**Mode:** Threading end mode

**Preparation:**

- (1) Remove the handle on the right side.
- (2) Open the RP-29P Boards Block.
- (3) Remove the Tape Beginning Sensor.

**Check procedure:**

- (1) Wind the tape to the reel table tension gauge in the counterclockwise direction.
- (2) Install the reel table tension gauge on the Take-up Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow, check that the scale reading meets the required specification.





## 7-2. REEL TORQUE ADJUSTMENT

### 7-2-1. Reel Zero Gram Torque Adjustment

- . After this adjustment, perform the Section 7-2-2 Reel 250 Gram Torque Adjustment.

**Tool:** Oscilloscope

**Mode:** Threading end mode

**Preparation:**

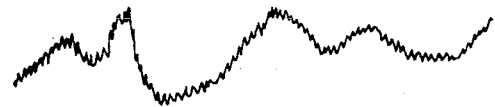
- (1) Set DIP switch S101-Bit 1 on the SV-82 Board to ON.
- (2) Without inserting a cassette tape, press the STOP button. Then the unit is put into the threading mode.
- (3) Short between TP4 on the SV-82 Board and GND with a shorting clip.
- (4) Connect the oscilloscope to TP13 on the SV-83 Board.

**Check procedure:**

- (1) Check that the voltage at TP13 meets the required specification.
- (2) Connect the oscilloscope to TP14 on the SV-83 Board.
- (3) Check that the voltage at TP14 meets the required specification.
- (4) Perform Steps (3) and (4) of the adjustment procedure so that the voltages at TP13 and TP14 meet the both specifications.

**Adjustment procedure:**

- (1) Adjust RV15 on the SV-83 Board to meet the required specification at TP13.
- (2) Adjust RV16 on the SV-83 Board to meet the required specification at TP14.
- (3) Remove the shorting clip between TP4 and GND. Press the EJECT button, then the unit is put into the unthreading mode.
- (4) Set DIP switch S101-Bit 1 to OFF.



The mean value is  $0 \pm 0.5V$ .

### 7-2-2. Reel 250 Gram Torque Adjustment

- It is required that Section 7-2-1 Reel Zero Gram Torque Adjustment is correct before initiating this adjustment.

**Tool:** Reel table tension gauge  
Tension scale (100 g full scale)

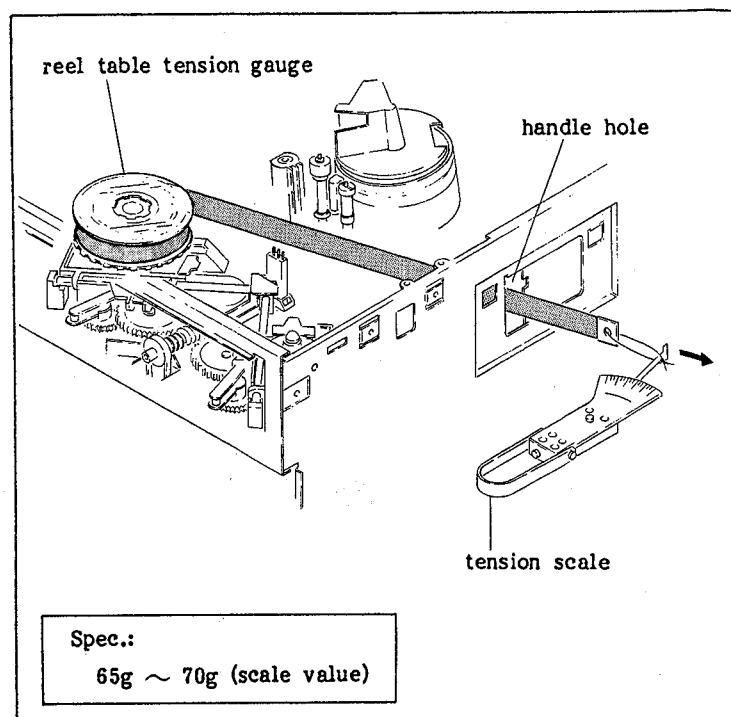
**Mode:** Threading end mode

**Preparation:**

- (1) Remove the handle on the right side.
- (2) Open the RP-29P Board Block.
- (3) Remove the tape beginning sensor.
- (4) Set DIP switch S101-Bit 1 on the SV-82 Board to ON.
- (5) Without inserting a cassette tape, press the STOP button. The unit is then put into the threading mode.
- (6) Short between TP4 on the SV-82 Board and GND with a shorting clip.
- (7) Set DIP switch S101-Bit 1 on the SV-82 Board to OFF.

**Check procedure:**

- (1) Wind the tape to the reel table tension gauge in the clockwise direction.
- (2) Stop the rotation of the Supply Reel Table by hand and install the reel table tension gauge on the Supply Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (3) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow and check that the scale reading is 65 to 70g.
- (4) Remove the reel table tension gauge from the Supply Reel Table and wind the tape to the reel table tension gauge in the counterclockwise direction.
- (5) Stop the rotation of the Take-up Reel Table by hand and install the reel table tension gauge on the Take-up Reel Table. Pass the end of the tape out for the unit from the hole of the handle.
- (6) Hook a tension scale to an end of the string. Move the tension scale in the direction of the arrow and check that the scale reading is 65 to 70g.



- (7) Perform Steps (3) and (4) of the adjustment procedure so that scale readings meet the both specifications.

**Adjustment procedure:**

- (1) Adjust RV4 on the SV-83 Board to meet the required specification at supply side.
- (2) Adjust RV13 on the SV-83 Board to meet the required specification at take-up side.
- (3) Set DIP switch S101-Bit 1 on the SV-82 Board to ON and remove the shorting clip between TP4 and GND.
- (4) Press the EJECT button. The unit is then put into the unthreading mode. After the unthreading is completed, set DIP switch S101-Bit 1 on the SV-82 Board to OFF.



## SECTION 8

### TAPE RUN ALIGNMENT

#### ALIGNMENT INFORMATION

#### MODES

##### Unthreading end mode

This indicates the EJECT completion mode. At the time of ejection, the tension regulator arm and threading ring are completely returned to the cassette tape side.

##### Threading mode

When the STOP button is pressed, the threading ring rotates counterclockwise.

##### Threading end mode (STOP mode)

When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is then stopped.

##### PLAY mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to Section 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel. The unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) When the PLAY button is pressed, the pinch roller is pressed against the capstan shaft, and the unit enters the PLAY mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

##### STANDBY OFF mode without a cassette tape

- (1) Put the unit into the STOP mode without a cassette tape (refer to Steps 1 through 4 described above).
- (2) Press the STANDBY button after the STANDBY lamp lights.  
The STANDBY lamp then goes off, and the unit enters the STANDBY OFF mode in which the drum rotation is stopped.
- (3) After adjustment is completed, set System Setup \*Item 902 to 0.
- (4) Set DIP switch S106 on the SY-61 Board to OFF.
- (5) Install the Cassette-up Compartment.

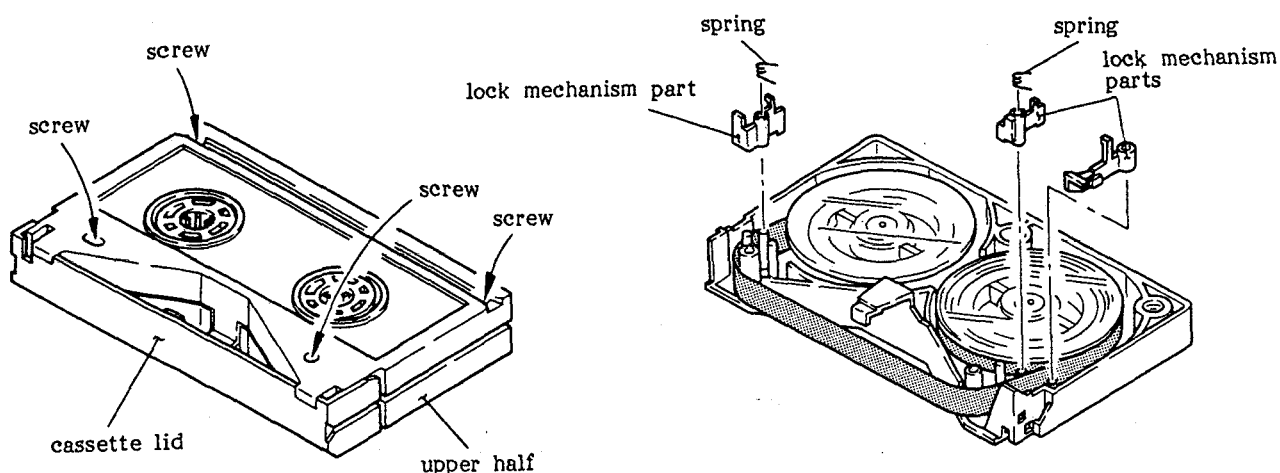
### REV mode without a cassette tape

- (1) Remove the Cassette-up Compartment (refer to 4-2).
- (2) Set DIP switch S106 on the SY-61 Board to ON.
- (3) Set System Setup \*Item 902 to 1.  
(At that time, message "Error" appears on the time counter display of the front panel.  
This unit is activated normally irrespective of its message.)
- (4) When the STOP button is pressed, the threading ring rotates counterclockwise, and the threading ring rotation is stopped. The STANDBY lamp then lights, and the unit enters the STOP mode.
- (5) Turn the search dial counterclockwise. The unit then enters the REV mode.
- (6) After adjustment is completed, set System Setup \*Item 902 to 0.
- (7) Set DIP switch S106 on the SY-61 Board to OFF.
- (8) Install the Cassette-up Compartment.

### Creating the Cassette Tape without Lid

Since the VTR is compact, some checks and adjustments cannot be performed if a cassette tape lid is installed. Remove the cassette tape lid as follows:

- (1) As shown in the figure, remove the four screws on the back of cassette tape BCT-20M and remove the upper half of the cassette tape.
- (2) Remove the lock mechanism parts and the springs on the left and right.
- (3) Remove the cassette lid from the upper half.
- (4) Install the upper half on the lower half with four screws from the back side.



### Creating the Alignment tape without Lid

Since the VTR is compact, tracking is difficult to adjust if an alignment tape is installed. Remove the lid of alignment tape CR2-1BPS for tracking adjustment. For removing, refer to the "Creating the Cassette Tape without Lid".

#### \* Item 902

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory. Setting should not be thus changed.

When setting is changed, be sure to return it to the initial value.

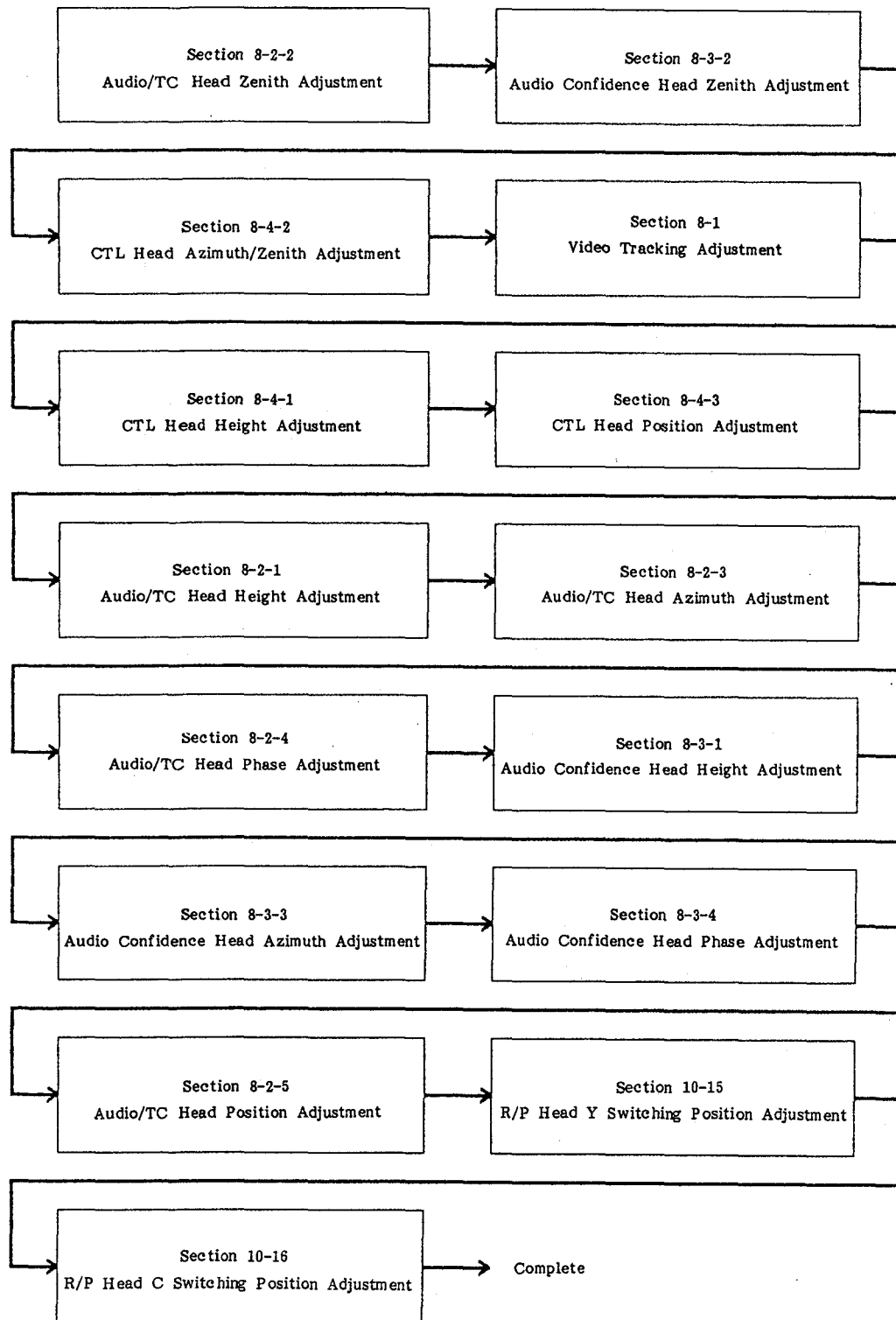
## **ALIGNMENT INFORMATION**

### **ALIGNMENT TAPE**

- . Alignment tape for tracking adjustment  
CR2-1B PS (8-960-096-51)
- . Alignment tape for general adjustment  
CR8-1A PS (8-960-098-45)  
CR8-1B PS (8-960-096-86)

## TRACKING ADJUSTMENT

- . The tracking adjustment is required to be performed in the following order:



## 8-1. VIDEO TRACKING ADJUSTMENT

**Tool:** Alignment tape, CR2-1B PS

Oscilloscope

Hex. key (across flat has 1.27 mm)

Inspection mirror

**Mode:** Play back the alignment tape

### Preparation:

- (1) Turn DIP switch S101-Bit4 on the SV-82 Board to "ON". (The phi-square servo circuit is off.)
- (2) Turn DIP switch S1 on the SV-83 Board to "ON". (The H-LOCK servo circuit is off.)
- (3) Remove the DM-56P Board. Extend it with an Extension Board.
- (4) Connect the oscilloscope as follows:  
CH-1: TP6/DM-56P Board  
EXT. TRIG: TP26/DM-56P Board
- (5) Play back the alignment tape.

### Check procedure:

- (1) When turn the TRACKING control knob, check that the RF waveform maintains a flat envelope while the amplitude increases and decreases.
- (2) Check that the RF envelope fluctuation and head-to-tape contact are within the specification at the FIXED position of the TRACKING control knob.
- (3) Check that the tape curls at the Tension Regulator, TG-1, TG-2, TG-3, and the Tape Threading Guide meets the required specification. (Refer to the adjustment procedure for specification.)
- (4) Check that the RF envelope head-to-tape contact is within the specification in the about REV x 1 mode.

### Adjustment procedure:

- When adjust the tape guide height.  
Loosen the setscrews of each tape guide in upper portion and adjust with the adjusting nut.

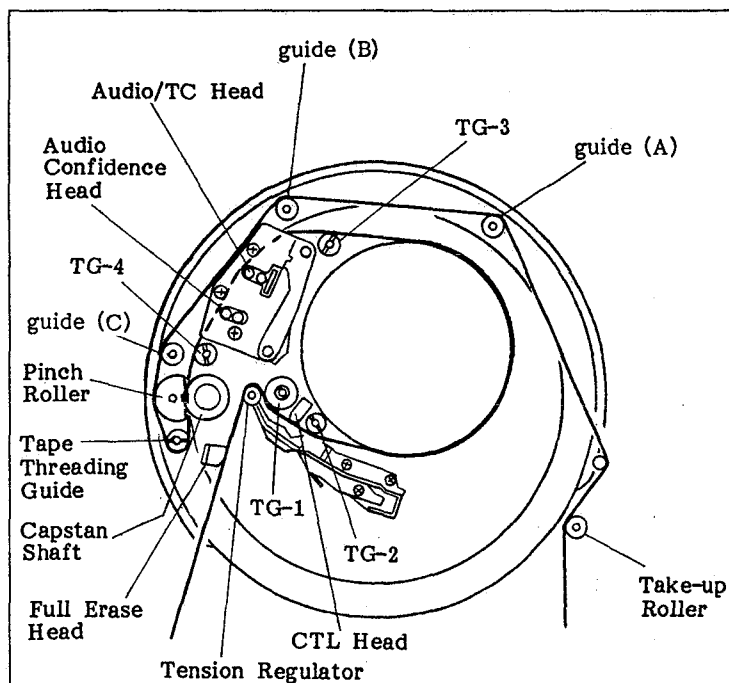
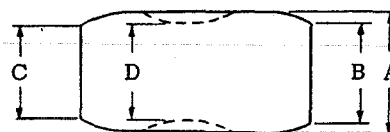


Fig. 1



### spec:

#### • During FWD

Head contact  $\frac{C}{A} \geq 0.8$   
 $\frac{B}{A} \geq 0.8$

Head contact fluctuation  
 $\frac{D}{A} \geq 0.9$

#### • During REV

Head contact  $\frac{C}{A} \geq 0.6$   
 $\frac{B}{A} \geq 0.6$



. When the tracking at the drum entrance side is not good.

- (1) Turn the adjusting nuts of TG-1 and TG-2. Make clearances at (a) and (b) of TG-1 and (a) and (b) of TG-2 as shown in figure 2.
- (2) Turn the adjusting nut of the Tension Regulator so that the RF waveform envelope changes from state (i) to state (ii) as shown in Fig. 3. Check that the tape runs in contact with the guide flange at the (a) portion of the Tension Regulator. If not, turn adjustment screw (b) of the Tension Regulator in counter-clockwise direction as shown in Fig. 4.
- (3) Turn the adjusting nut of TG-2 so that the tape runs in contact with the guide flange at the (b) portion of TG-2 and the RF waveform envelope flattens. Check that the tape does not in contact with the guide flange at the (b) portion of TG-1. The tape curl at the (a) portion of Tension Regulator and/or (b) portion of TG-2 is acceptable within the range shown in Fig. 5. Tape curl at the drum, however, is not acceptable.
- (4) Turn the TRACKING control knob to the FIXED position. Put the unit into the REV x 1 mode.
- (5) Check that the RF waveform envelope is small at the drum entrance side as shown in Fig. 6.
- (6) Put the unit into the PLAY mode. Turn the adjusting nut of TG-1 so that the tape runs in contact with the guide flange at the (a) portion. The tape curl at (a) portion is acceptable within the range shown in Fig. 5.
- (7) Put the unit into the REV x 1 mode. Check that the RF envelope waveform is flat and the tape-to-head contact meets the required specification.

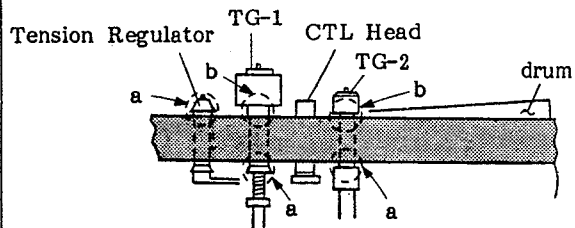
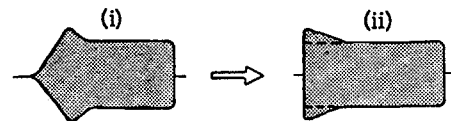


Fig. 2



When tape portion "a" of the Tension Regulator shown in Fig. 2 is pressed down, the waveform should be flat.

Fig. 3

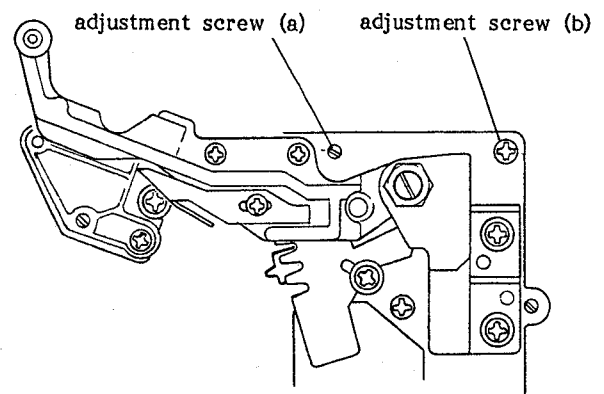


Fig. 4

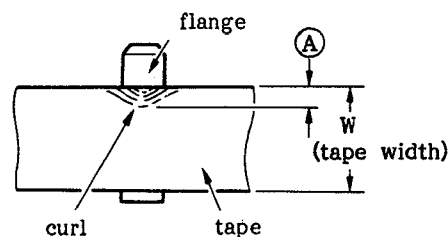


Fig. 5

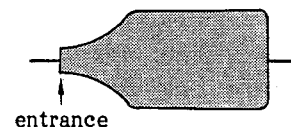


Fig. 6

- (8) Put the unit into the PLAY mode. Check that the tape-to-head contact meets the required specification.
- (9) Tighten the setscrews of each tape guide, and check again.
- (10) Restore the DIP switch setting as described in preparation steps (1) and (2).

. When the tracking at the drum exit side is not good.

- (1) Turn the adjusting nuts of TG-3 and TG-4, and make clearances at (a) of TG-3, (b) of TG-4, and (a) and (b) of the Tape Threading Guide as shown in Fig. 7.
- (2) Turn the adjusting nut of TG-4 so that the RF waveform envelope changes from state (i) to state (ii) shown in Fig. 8. Check that the tape does not in contact with the guide flange at the (a) portion of TG-3 or (a) portion of the Tape Threading Guide.
- (3) Turn the adjusting nut of TG-3 so that the tape runs in contact with the guide flange at the (a) portion of TG-3 and the RF waveform envelope flattens. The tape curl is acceptable within the range shown in Fig. 5.
- (4) Turn the adjusting nut of the Tape Threading Guide so that the tape runs lightly in contact with the guide flange at the (a) portion.
- (5) Turn the TRACKING control knob to the FIXED position. Check that the tape-to-head contact meets the required specification.
- (6) Put the unit into the REV x 1 mode.
- (7) Check that the RF waveform envelope is flat and the tape-to-head contact meets the required specification.
- (8) Tighten the setscrews of each tape guide, and check again.
- (9) Restore the DIP switch setting as described in preparation steps (1) and (2).

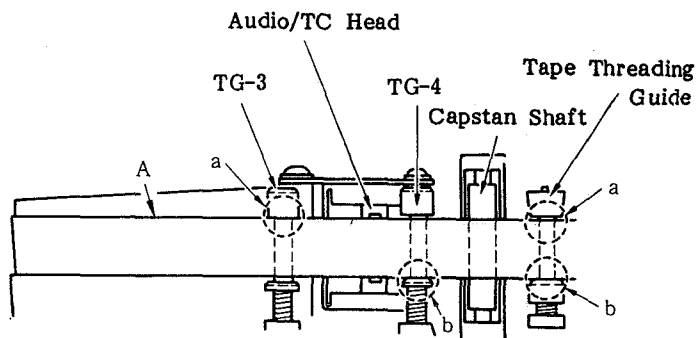
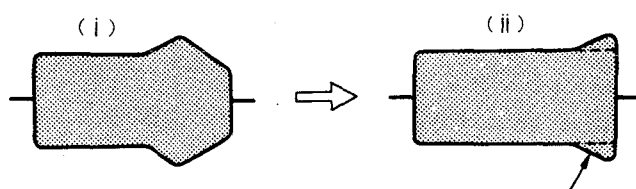


Fig. 7



When tape portion "A" shown in Fig. 7 is pressed down, the waveform should be flat.

Fig. 8

## 8-2. AUDIO/TC HEAD ADJUSTMENT

### 8-2-1. Audio/TC Head Height Adjustment

**Tool:** Alignment tape, CR8-1A PS  
Dual-trace oscilloscope or VTVM

**Mode:** Play back the alignment tape.

**Preparation:**

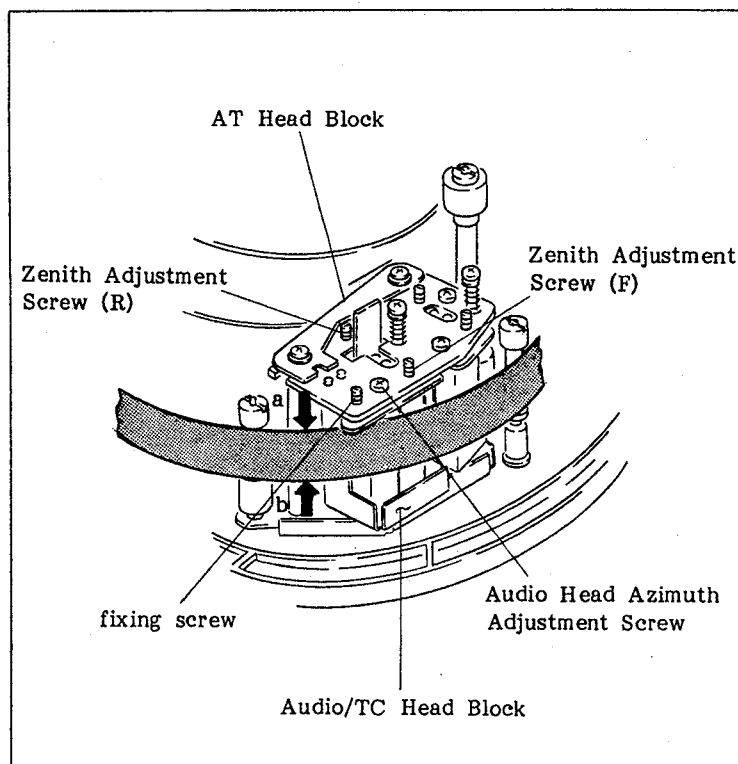
- (1) Check that DIP switch S301 on the AU-76P Board is OFF. (Audio signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope or VTVM to the AUDIO OUT CH-1 or CH-2.
- (4) Play back the last 1kHz signal segment on the alignment tape. (Never play back the 1kHz signal segment at the tape top.)

**Check procedure:**

- (1) When pressing down the tape at (a) portion, check that the level decreases.
- (2) When pushing up the tape at (b) portion, check that the level decreases.

**Adjustment procedure:**

- . When the level increases while pressing down the tape at (a) portion.
- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 2 to 3 turns.
- (3) Turn the Zenith Adjustment Screws (R) and (F) in the counterclockwise direction and turn the Azimuth Height Adjustment Screw an exactly equal amount in the clockwise direction. Adjust for maximum output waveform.
- (4) Tighten the fixing screw and check again.



. When the level increases while pushing up the tape at (b) portion.

- (5) Turn the Zenith Adjustment Screws (R) and (F) in the clockwise direction and turn the Azimuth Height Adjustment Screw an exactly equal amount in the counter-clockwise direction. Adjust for maximum output waveform.
- (6) Tighten the fixing screw and check again.
- (7) Perform Section 8-2-2, Audio/TC Head Zenith Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (8) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.

## 8-2-2. Audio/TC Head Zenith Adjustment

**Tool:** Flatness plate

**Mode:** Unthreading end mode

### Check procedure:

- (1) Check that the clearance between the head and the flatness plate meets the required specification when the flatness plate is placed on the Audio/TC Head and TG-3.

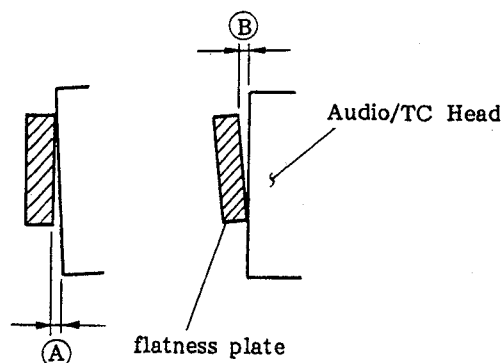
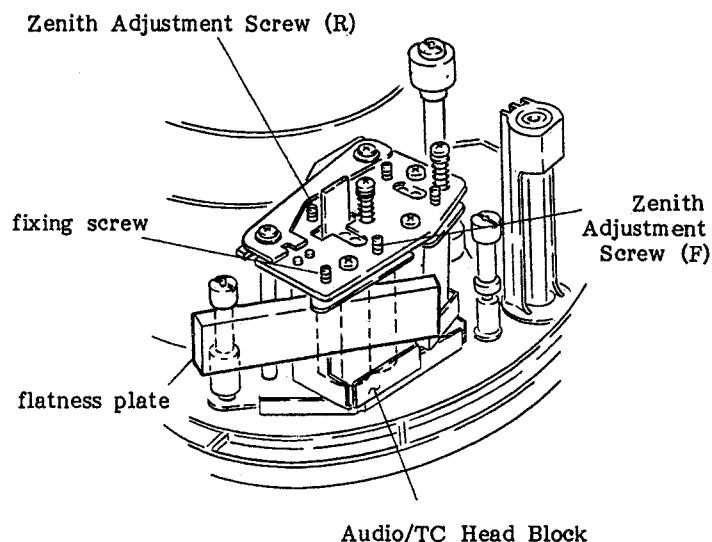
### Adjustment procedure:

. If there is the clearance at the bottom portion.

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw of the AT Head Block 1/4 to 1 turn.
- (3) Turn the Zenith Adjustment Screw (R) in the clockwise direction to meet the required specification.
- (4) Tighten the fixing screw and check again.

. If there is the clearance at the top portion.

- (5) Loosen the fixing screw of the AT Head Block 1/4 to 1 turn.
- (6) Turn the Zenith Adjustment Screw (R) in the counterclockwise direction to meet the required specification.
- (7) Tighten the fixing screw and check again.
- (8) After adjustment, perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



Spec.:

$0 \leq \textcircled{A} \leq 0.1\text{mm}$

$\textcircled{B} = 0\text{mm}$

### 8-2-3. Audio/TC Head Azimuth Adjustment

**Tool:** Alignment tape, CR8-1B PS  
Dual-trace oscilloscope or VTVM

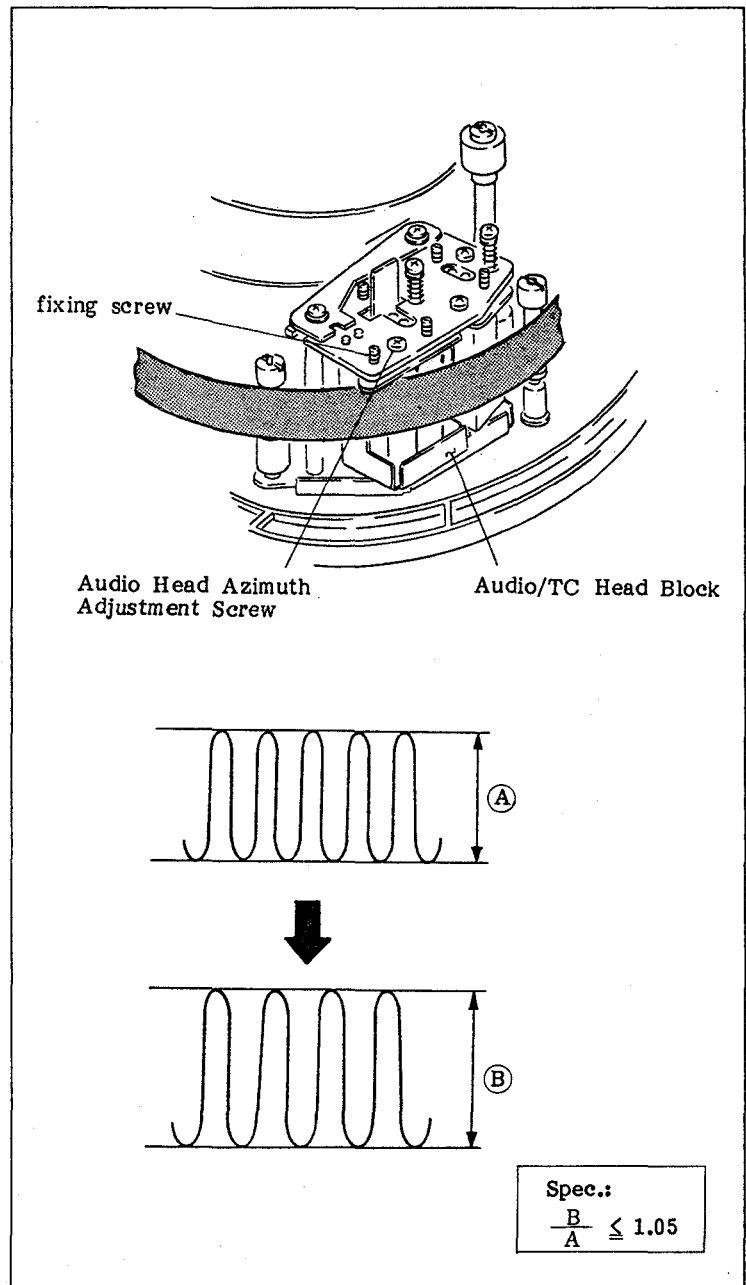
**Mode:** Play back the alignment tape.

**Preparation:**

- (1) Check that DIP switch S301 on the AU-76P Board is OFF. (Audio signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope to the AUDIO OUT CH-1 or CH-2 terminal.
- (4) Play back the audio 15kHz signal portion on the alignment tape.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1 turn.
- (3) Adjust for the maximum output level by turning the Audio Head Azimuth Height Adjustment screw.
- (4) When holding down the tape near the drum with a skewer, check that the level change meets the required specification.
- (5) Tighten the fixing screw, check it again.
- (6) After adjustment, perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-4, Audio/TC Head Phase Adjustment; and Section 8-2-5, Audio/TC Head Position Adjustment.
- (7) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



#### 8-2-4. Audio/TC Head Phase Adjustment

**Tool:** Alignment tape, CR8-1B PS

Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

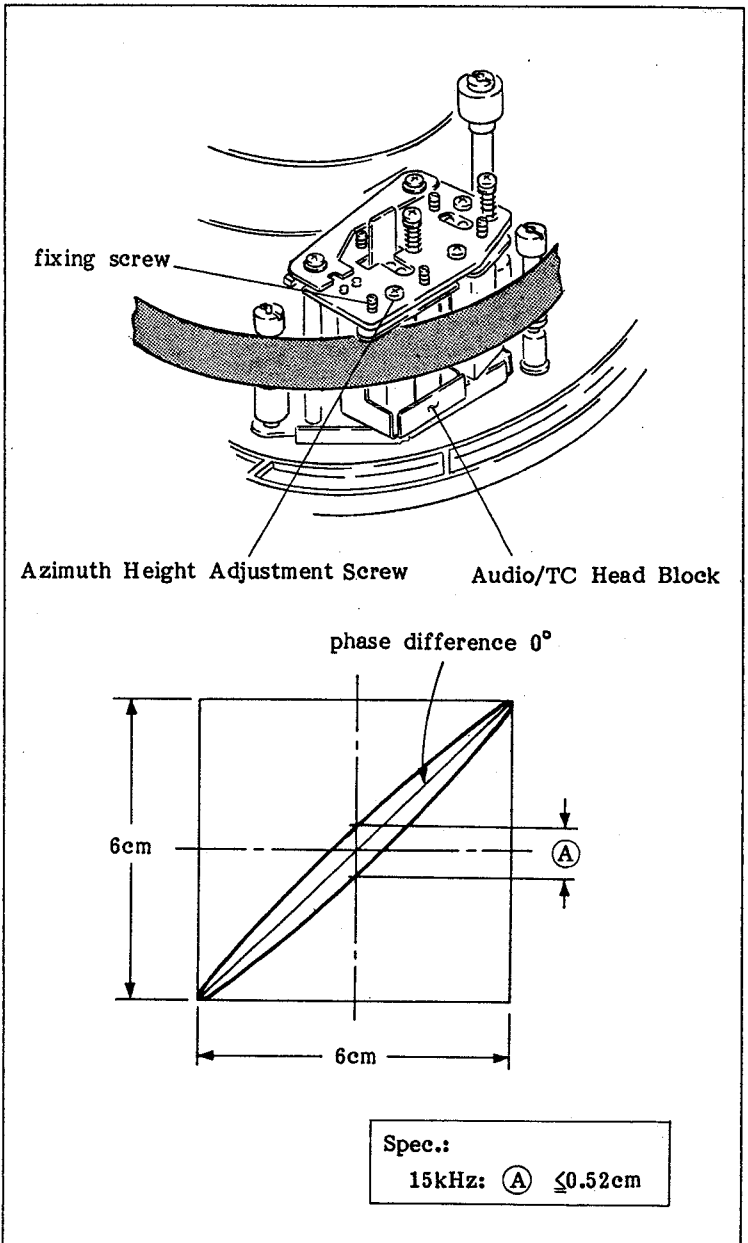
- (1) Check that DIP switch S301 on the AU-76P Board is OFF. (Audio Signal is played back in the AT Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is OFF. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 terminals.
- (4) Play back the audio 15kHz portion on the alignment tape.
- (5) Adjust the scope for horizontal and vertical amplitudes for a 6 cm lissajous waveshape.

**Check procedure:**

- (1) Check that the lissajous waveshape meets the required specification at 15kHz.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1/4 to 1/2 turn.
- (3) Turn the Azimuth Height Adjustment Screw to meet the required specification.
- (4) Tighten the fixing screw and check again.
- (5) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



### 8-2-5. Audio/TC Head Position Adjustment

. It is required that the Section 8-4-3, CTL Head Position Adjustment is checked to be correct before initiating this adjustment.

**Tool:** Alignment tape, CR2-1B PS  
Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

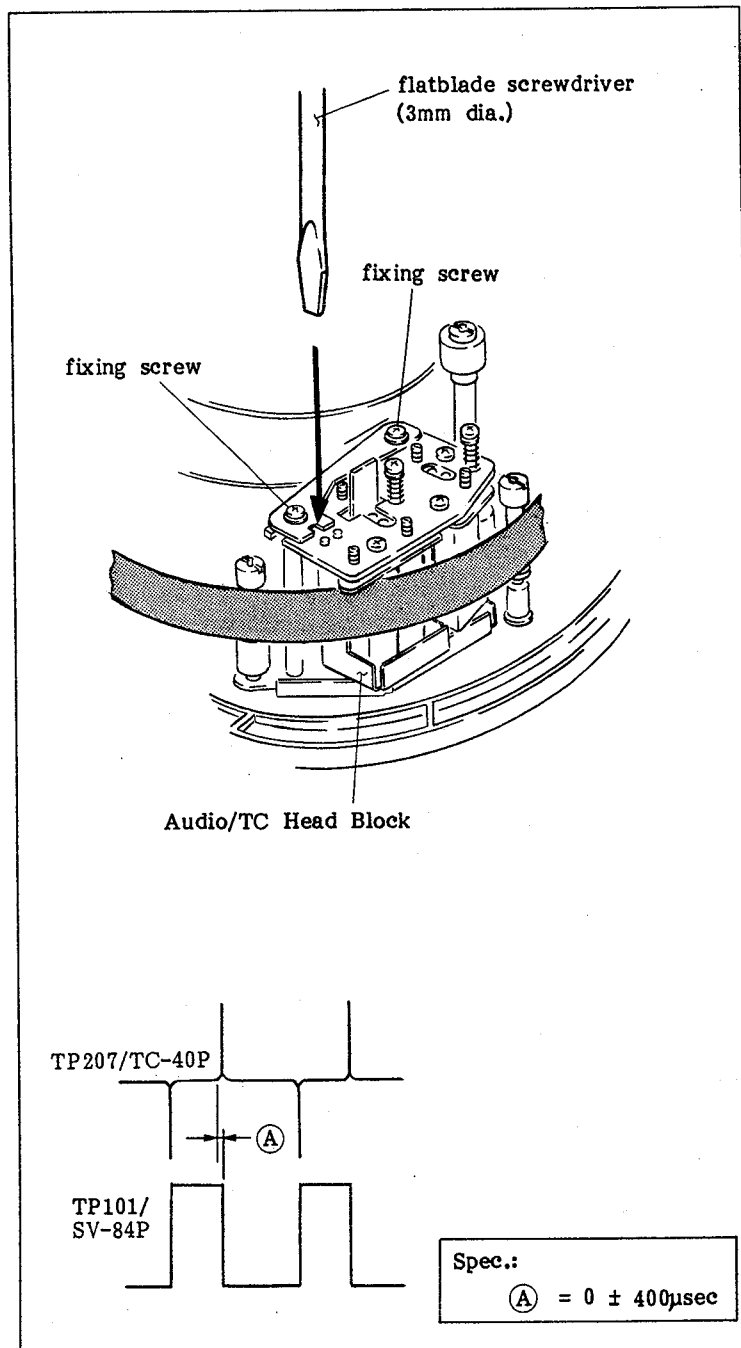
- (1) Connect the oscilloscope as follows:  
CH-1: TP101/SV-84P Board  
CH-2: TP207/TC-40P Board  
TRIG: INTERNAL, CH-1
- (2) Play back the alignment tape.

**Check procedure:**

- (1) Check that the waveform meets the required specification.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screws.
- (3) Adjust the position of the head block with a flatblade screwdriver (3 mm dia.) to meet the required specification.
- (4) Tighten the fixing screws, check again.
- (5) Perform Section 8-2-1, Audio/TC Head Height Adjustment; Section 8-2-2, Audio/TC Head Zenith Adjustment; Section 8-2-3, Audio/TC Head Azimuth Adjustment; and Section 8-2-4, Audio/TC Head Phase Adjustment.
- (6) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.





### 8-3. AUDIO CONFIDENCE HEAD ADJUSTMENT

#### 8-3-1. Audio Confidence Head Height Adjustment

**Tool:** Alignment tape, CR8-1B PS  
Dual-trace oscilloscope or VTVM

**Mode:** Play back the alignment tape.

**Preparation:**

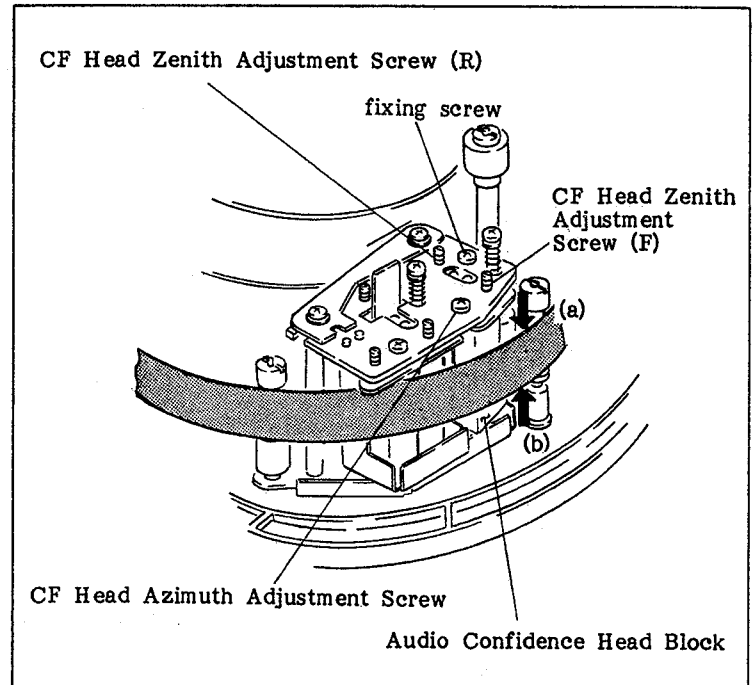
- (1) Turn DIP switch S301 on the AU-76P Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is off. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope or VTVM to the AUDIO OUT CH-1 or CH-2.
- (4) Play back the last 1kHz signal segment on the alignment tape. (Never play back the 1kHz signal segment at the tape top.)

**Check procedure:**

- (1) When pressing down the tape at (a) portion, check that the level decreases.
- (2) When pushing up the tape at (b) portion, check that the level decreases.

**Adjustment procedure:**

- When the level increase while pressing down the tape at (a) portion.
  - (1) Remove the Cleaning Roller Block.
  - (2) Loosen the fixing screw of the CF Head 2 to 3 turns.
  - (3) Turn the Zenith Adjustment Screws (R) and (F) in the counterclockwise direction and turn the CF Head Azimuth Height Adjustment Screw in the clockwise direction an exactly equal amount. Adjust for maximum output waveform.
  - (4) Tighten the fixing screw and check again.



- . When the level increases while pushing up the tape at (b) portion.
- (5) Turn the CF Head Zenith Adjustment Screws (R) and (F) in the clockwise direction and turn the CF Head Azimuth Height Adjustment Screw in the counter-clockwise direction an exactly equal amount. Adjust for maximum output waveform.
- (6) Tighten the fixing screw and check again.
- (7) Restore the DIP switch setting as described in preparation step (1).
- (8) Perform Section 8-3-2, Audio Confidence Head Zenith Adjustment; Section 8-3-3, Audio Confidence Head Azimuth Adjustment; and Section 8-3-4, Audio Confidence Head Phase Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.

### 8-3-2. Audio Confidence Head Zenith Adjustment

**Tool:** Flatness plate

**Mode:** Unthreading end mode

**Check procedure:**

- (1) Check that the clearance between the head and the flatness plate meets the required specification when the flatness plate is placed on the Audio Confidence Head and the TG-4.

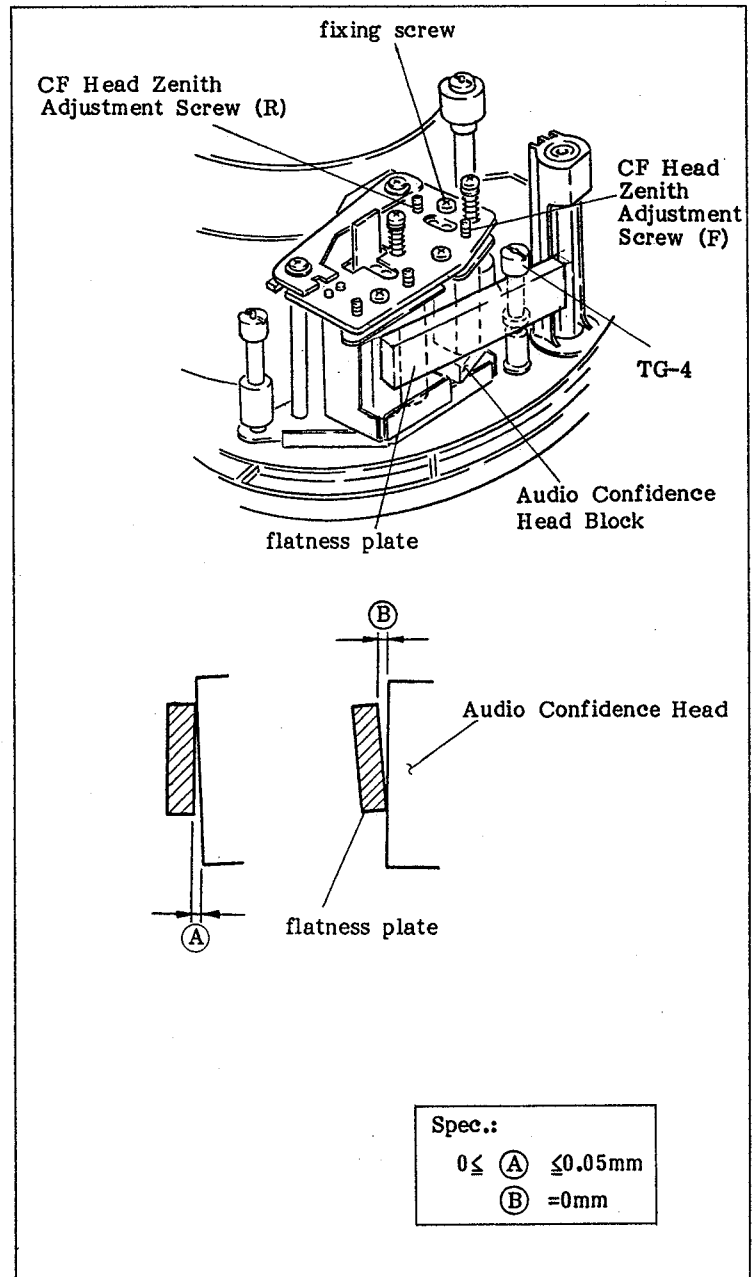
**Adjustment procedure:**

. If there is the clearance at the bottom.

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw of the Audio Confidence Head Block 1/4 to 1 turn.
- (3) Turn the CF Head Zenith Adjustment Screw (R) in the clockwise direction to meet the required specification.
- (4) Tighten the fixing screw and check again.

. If there is the clearance at the top.

- (5) Loosen the fixing screw of the Audio Confidence Head Block 1/4 to 1 turn.
- (6) Turn the CF Head Zenith Adjustment Screw (R) in the counterclockwise direction to meet the required specification.
- (7) Tighten the fixing screw and check again.
- (8) After adjustment, perform Section 8-3-1, Audio Confidence Head Height Adjustment; Section 8-3-3, Audio Confidence Head Azimuth Adjustment; and Section 8-3-4, Audio Confidence Head Phase Adjustment.
- (9) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



### 8-3-3. Audio Confidence Head Azimuth Adjustment

**Tool:** Alignment tape, CR8-1B PS  
Dual-trace oscilloscope or VTVM

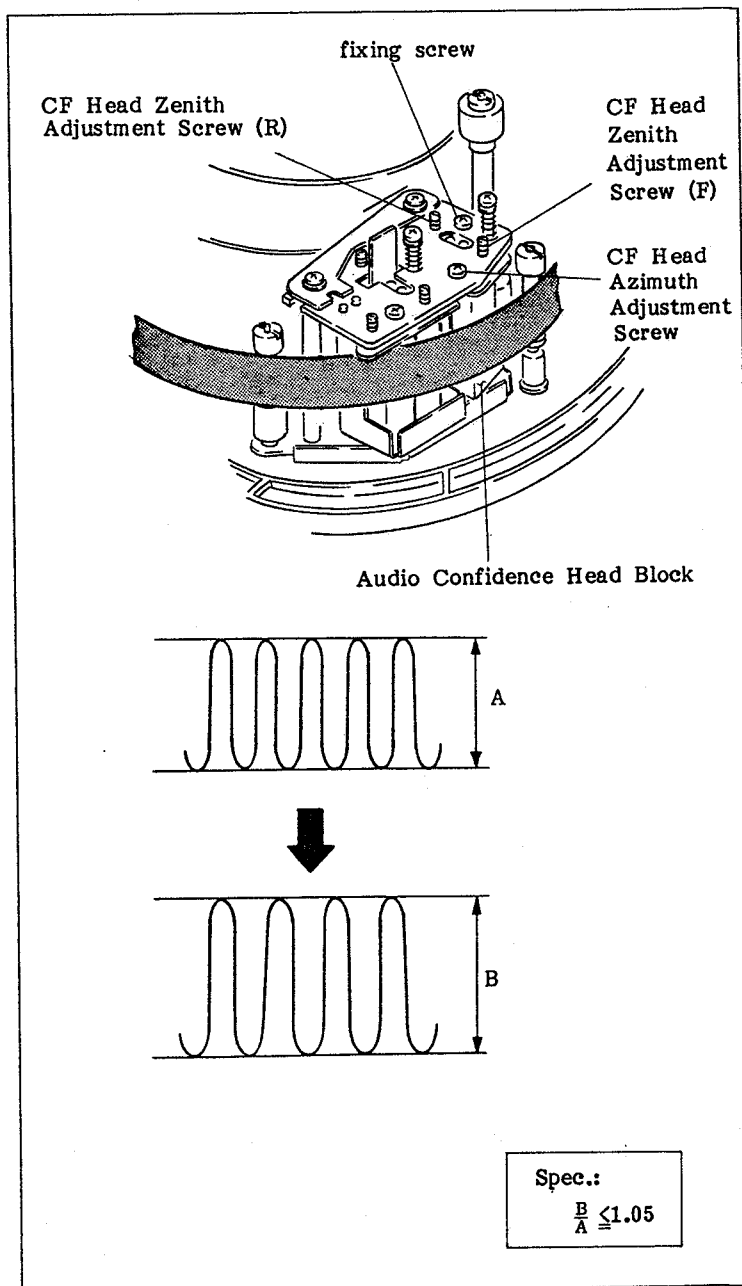
**Mode:** Play back the alignment tape.

**Preparation:**

- (1) Turn DIP switch S301 on the AU-76P Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the DOLBY NR switch on the Sub Panel is off. (Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the oscilloscope to the AUDIO OUT CH-1 or CH-2 terminal.
- (4) Play back the audio 15kHz signal portion on the alignment tape.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw of the CF Head 1 turn.
- (3) Adjust for the maximum output level by turning the CF Head Azimuth Height Adjustment screws.
- (4) When holding down the tape near the drum with a skewer, check that the change of the level meets the required specification. Tighten the fixing screw, check it again.
- (5) After adjustment, restore the DIP switch as described in preparation step (1).
- (6) Perform Section 8-3-4, Audio Confidence Head Phase Adjustment; and Section 8-3-1, Audio Confidence Head Height Adjustment.
- (7) Install the Cleaning Roller Block, Perform Section 6-9, Cleaning Roller Position Adjustment.



#### 8-3-4. Audio Confidence Head Phase Adjustment

**Tool:** Alignment tape, CR8-1B PS  
Dual-trace oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

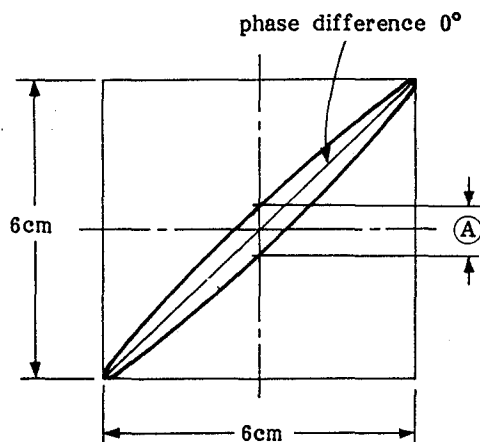
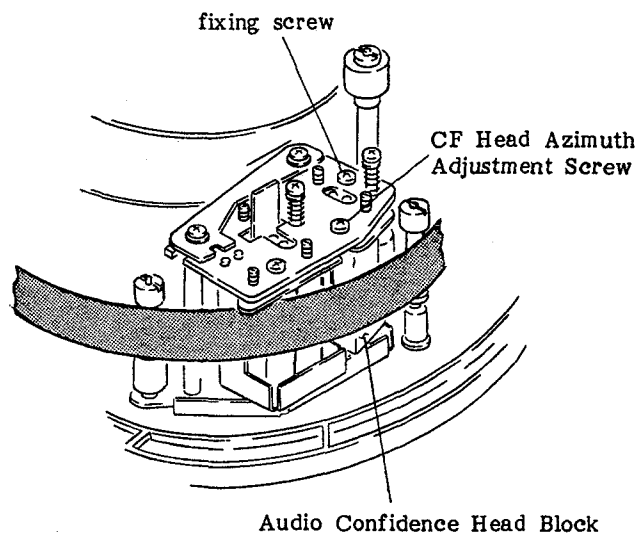
- (1) Turn DIP switch S301 on the AU-76P Board to on. (Audio signal is played back in the CF Head.)
- (2) Check that the "DOLBY NR" switch on the Sub Panel is off. (The Dolby NR (Noise Reduction) circuit is off.)
- (3) Connect the horizontal and vertical terminals of the oscilloscope to the AUDIO OUT CH-1 and CH-2 terminals.
- (4) Play back the audio 15kHz portion on the alignment tape.
- (5) Adjust the scope for horizontal and vertical amplitudes for a 6 cm lissajous waveshape.

**Check procedure:**

- (1) Check that the lissajous waveshape meets the required specification at 15kHz.

**Adjustment procedure:**

- (1) Remove the Cleaning Roller Block.
- (2) Loosen the fixing screw 1/4 to 1/2 turn.
- (3) Turn the CF Head Azimuth Height Adjustment Screw to meet the required specification.
- (4) Tighten the fixing screw and check again.
- (5) Restore the DIP switch setting as described in preparation step (1).
- (6) Install the Cleaning Roller Block, perform Section 6-9, Cleaning Roller Position Adjustment.



Spec.:  
15kHz: (A)  $\leq 0.52$  cm

## 8-4. CTL HEAD ADJUSTMENT

### 8-4-1. CTL Head Height Adjustment

**Tool:** Alignment tape, CR8-1A PS  
Oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

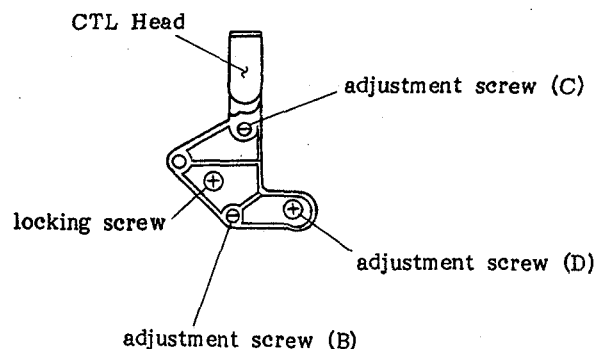
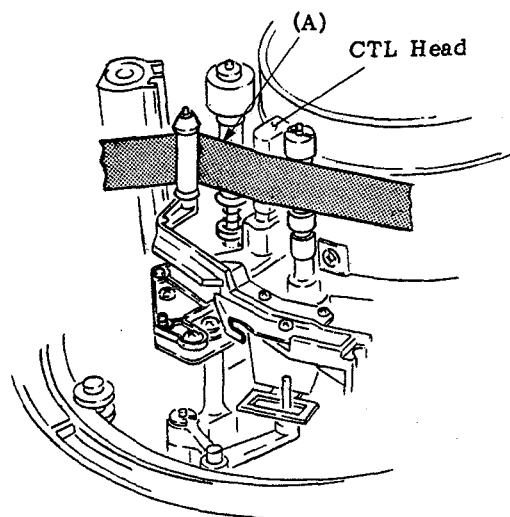
- (1) Remove the SV-84P Board, extend it with an Extension Board.
- (2) Connect the oscilloscope as follows:  
CH-1: TP100/SV-84P Board  
TRIG: INTERNAL, CH-1
- (3) Turn DIP switch S101-bit 3 on the SV-82 Board to on.
- (4) Insert the alignment tape, and play back the audio 1kHz signal portion recorded on the CTL track of the alignment tape.

**Check procedure:**

- (1) Open the RP-29P Boards Block.
- (2) When pressing the tape down and pushing it up at (A) portion, check that both levels decrease. If the levels increase, the following adjustments are required.

**Adjustment procedure:**

- . When the levels increase while pressing down the tape at (A) portion.
  - (1) Loosen the locking screw 1 turn.
  - (2) Turn the adjustment screw (D) in the counterclockwise direction and turn the adjustment screws (C) and (B) in the clockwise direction an exactly equal amount. Adjust for maximum output waveform.
- (3) Tighten the locking screw and check again.
- . When the levels increase while pushing up the tape at (A) portion.
  - (4) Loosen the locking screw 1 turn.
  - (5) Turn adjustment screw (D) in the clockwise direction and turn the adjustment screws (C) and (B) in the counterclockwise direction an exactly equal amount. Adjust the maximum output waveform.



- (6) Tighten the locking screw and check again.
- (7) After adjustment, perform Section 8-4-2, CTL Head Azimuth/Zenith Adjustment; and Section 8-4-3, CTL Head Position Adjustment.
- (8) Turn DIP switch S101-bit 3 on the SV-82 Board to off.

#### 8-4-2. CTL Head Azimuth/Zenith Adjustment

**Tool:** Cassette reference plate (L)

Tension regulator slantness check tool

**Mode:** Threading end mode

**Check procedure:**

- (1) Open the RP-29P Boards Block.
- (2) Install the cassette reference plate (L) into the cassette position.
- (3) Place the tension regulator slantness check tool at the CTL Head as shown in the figure. Check that the slantness of the CTL Head meets the required specification.

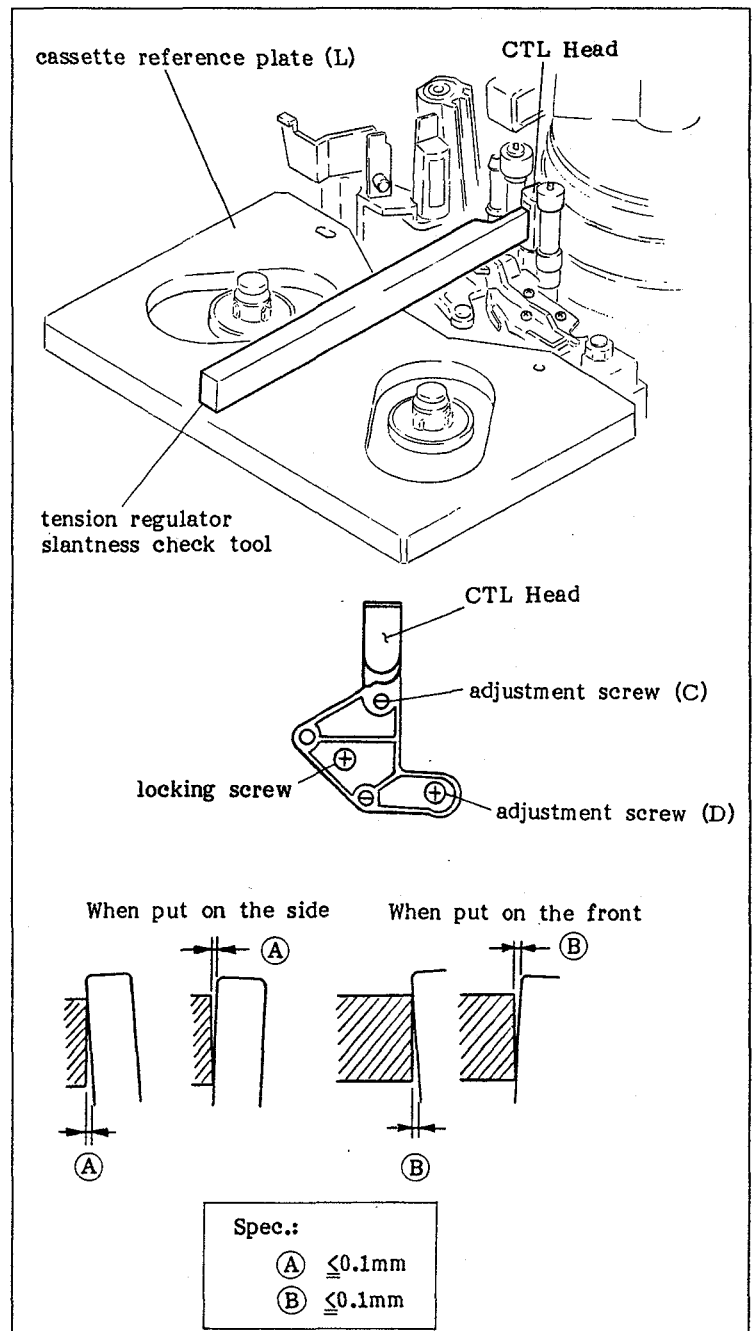
**Adjustment procedure:**

. When the zenith is out of spec.

- (1) Loosen the locking screw 1 turn.
- (2) Adjust the zenith with adjustment screw (C) to meet the required specification.
- (3) Tighten the locking screw and check the azimuth and zenith.

. When the azimuth is out of spec.

- (4) Loosen the locking screw 1 turn.
- (5) Adjust the azimuth with adjustment screw (D) to meet the required specification.
- (6) Tighten the locking screw and check the azimuth and zenith.
- (7) After adjustment, perform Section 8-4-1, CTL Head Height Adjustment; and Section 8-4-3, CTL Head Position Adjustment.



### 8-4-3. CTL Head Position Adjustment

**Tool:** Alignment tape, CR2-1B PS  
Oscilloscope

**Mode:** Play back the alignment tape.

**Preparation:**

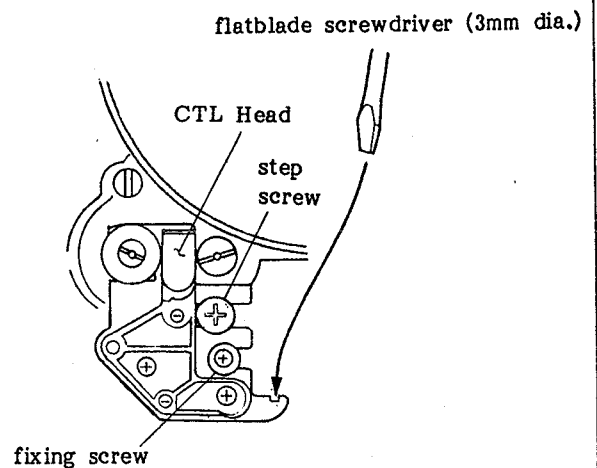
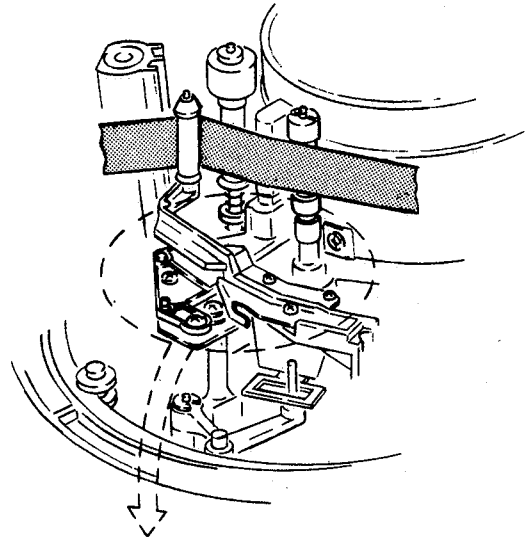
- (1) Turn DIP switch S101-bit4 on the SV-82 Board to "ON". (The phi-square servo circuit is off.)
- (2) Turn DIP switch S1 on the SV-83 Board is on. (The H-LOCK servo circuit is off.)
- (3) Open the RP-29P Boards Block.
- (4) Remove the DM-56P Board, extend it with an Extension Board.
- (5) Connect the oscilloscope as follows:  
CH-1: TP6/DM-56P Board  
EXT. TRIG: TP21/DM-56P Board
- (6) Play back the alignment tape.

**Check procedure:**

- (1) While turning the TRACKING control knob, check that the RF envelope has the maximum amplitude at the FIXED position.

**Adjustment procedure:**

- (1) Loosen the fixing screw 1/4 to 1/2 turn.
- (2) Insert a flatblade screwdriver (3 mm dia.) into the hole of the CTL Head Base. Adjust the position of the CTL Head Block to meet the required specification.
- (3) After adjustment, perform Section 8-2-5, TC Head Position Adjustment.
- (4) Restore the DIP switch setting as described in preparation steps (1) and (2).





## 8-5. T DRAWER GUIDE BLOCK TAPE RUN ADJUSTMENT

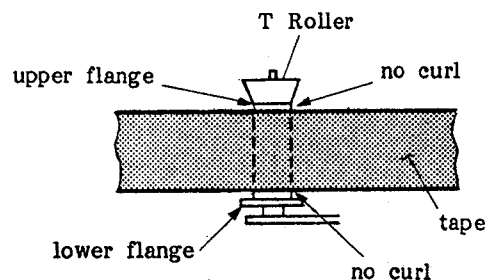
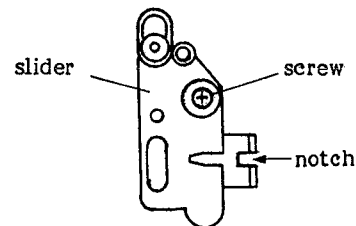
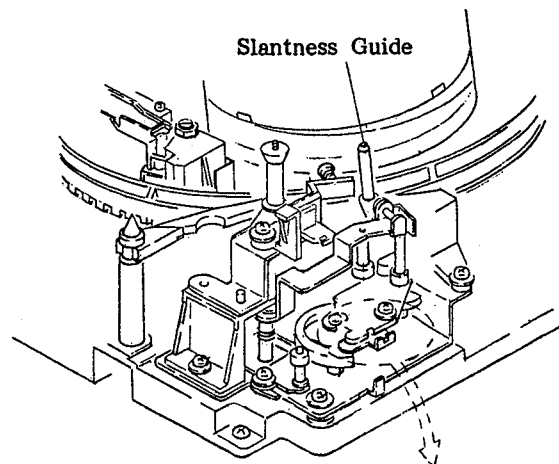
### Check procedure:

- (1) Insert the BCT-20M cassette tape and press the PLAY button.
- (2) Check that the tape runs in the tape width direction before and behind a Slantness Guide without uneven tape tension.
- (3) Check that no tape curl occurs on the upper and lower flanges of the T Roller.
- (4) Press the F.FWD button.
- (5) Check that the tape runs and no tape curl occurs as described in procedures (2) and (3).
- (6) Press the REW button.
- (7) Check that the tape runs and no tape curl occurs as described in procedures (2) and (3).

### Adjustment procedure:

- . When the upper edge of the tape slackens or the tape curl occurs on the upper flange.
  - (1) Loosen the fixing screw as shown in the figure.
  - (2) Insert the flatblade screwdriver into the notch and turn it moving counterclockwise.
- . When the lower edge of the tape slackens or the tape curl occurs on the lower flange.
  - (3) Loosen the fixing screw as shown in the figure.
  - (4) Insert the flatblade screwdriver into the notch and turn it moving clockwise.
  - (5) After adjustment, tighten the fixing screw and check again.

Note: To prevent a slider from damage, put your fingers under the slider when loosening or tightening the screw. Then, hold the screwdriver's force with your fingers.



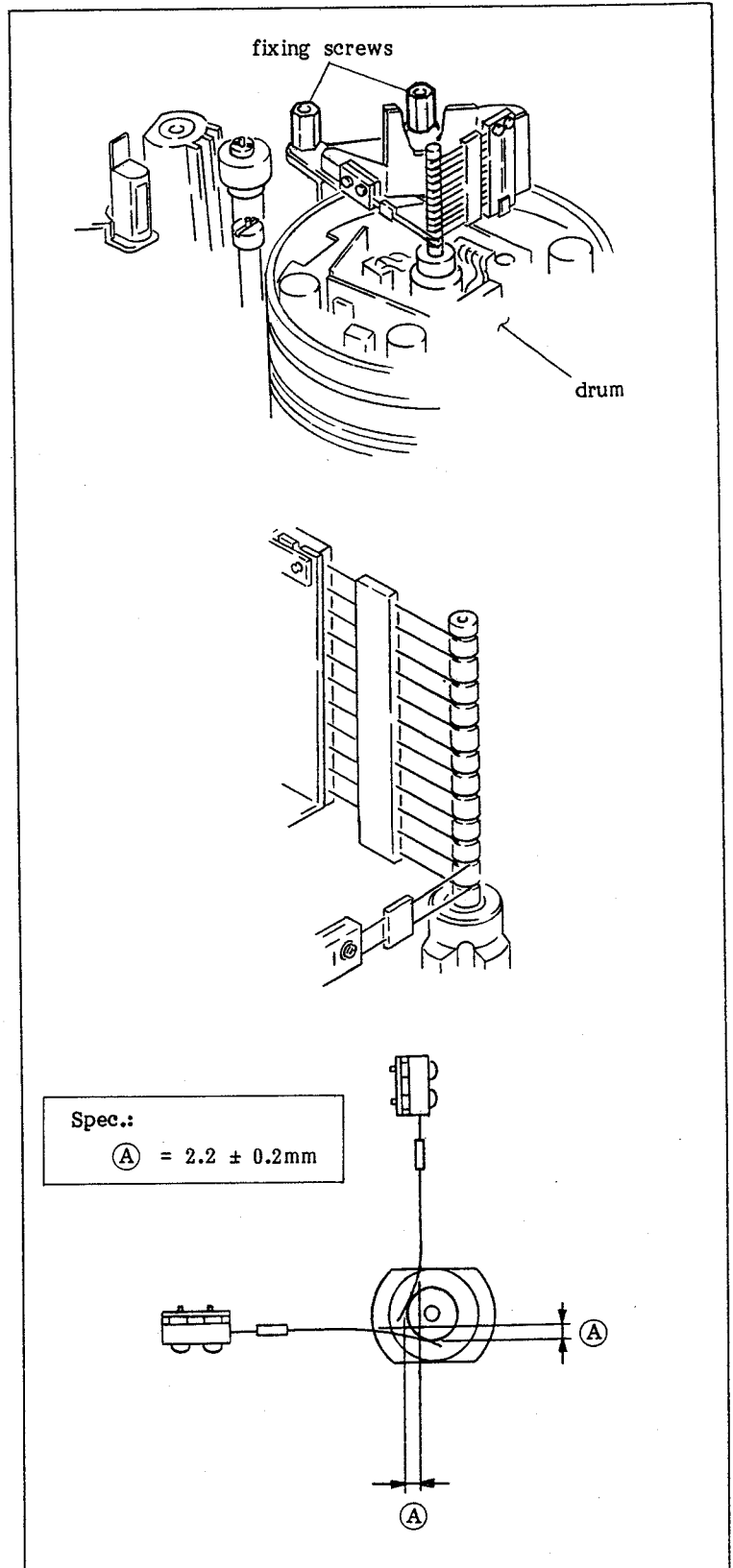
## 8-6. SLIP RING BRUSH POSITION ADJUSTMENT

### Check procedure:

- (1) Check that the position of the brush and ring meets the required specification.
- (2) Check that the brush is in the groove of the ring as shown in the figure.

### Adjustment procedure:

- (1) Remove the Brush Cover.
- (2) Loosen the fixing screws 1/2 to 1 turn.
- (3) Adjust the position of the brush so that it is in the groove of the ring and bending meets the required specification.
- (4) Tighten the fixing screws and check again.
- (5) Install the Brush Cover.

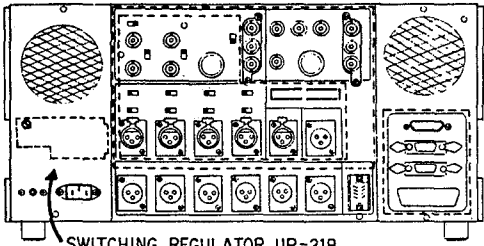
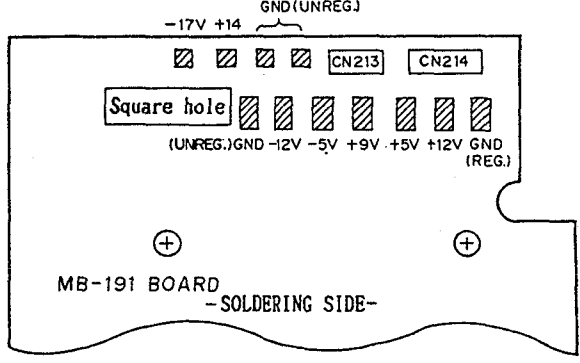




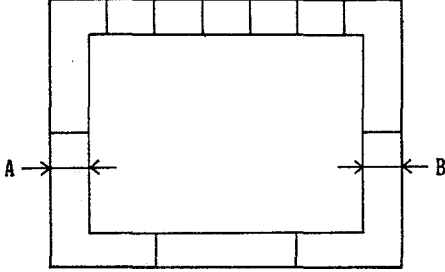
## SECTION 9

### POWER AND CONTROL SYSTEM ALIGNMENT

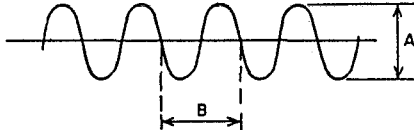
#### 9-1. DC VOLTAGE REGULATOR (UR-21B) ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove the power block from the unit. (Refer to Sec. 4-3.)</li> <li>Connect the connectors again.</li> <li>Solder the lead wires at the land on the MB-191 board (at the back of the main unit), and connect a digital voltmeter to the lead wire.</li> <li>Turn on the power.</li> <li>Insert a blank tape and put the unit into the REC mode.</li> <li>Using an alignment tool, adjust the voltage from the outside of the switching regulator's outer cabinet.</li> </ul>	<p>Connector Panel</p>  <p>SWITCHING REGULATOR UR-21B</p>  <p>MB-191 BOARD - SOLDERING SIDE -</p>	
	<ul style="list-style-type: none"> <li>+12V adjustment Between +12V regulator and GND land/MB-191 <math>+12.1 \pm 0.3\text{Vdc}</math></li> </ul>	<p>Switching regulator</p> <p>RV51/UR-21B-C2 (+12V ADJ)</p>
	<ul style="list-style-type: none"> <li>-12V adjustment Between -12V regulator and GND land/MB-191 <math>-12.1 \pm 0.3\text{Vdc}</math></li> </ul>	<p>Switching regulator</p> <p>RV251/UR-21B-M2 (-12V ADJ)</p>
	<ul style="list-style-type: none"> <li>+5V adjustment Between +5V regulator and GND land/MB-191 <math>+5.1 \pm 0.25\text{Vdc}</math></li> </ul>	<p>Switching regulator</p> <p>RV51/UR-21B-C1 (+5V ADJ)</p>
	<ul style="list-style-type: none"> <li>-5V adjustment Between -5V regulator and GND land/MB-191 <math>-5.1 \pm 0.25\text{Vdc}</math></li> </ul>	<p>Switching regulator</p> <p>RV201/UR-21B-M1 (-5V ADJ)</p>
<ul style="list-style-type: none"> <li>After adjustment is completed, install the switching regulator and other parts.</li> </ul>		

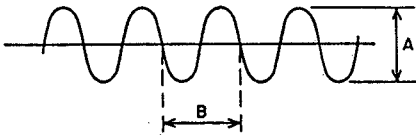
## 9-2. VIDEO OUT-3 CHARACTER POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bars signal to the VIDEO IN connector.</li> <li>• Connect a monitor to the VIDEO OUT 3 connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Set S101 (CHARACTER switch) on the SY-61 board to ON and press S103 (SETUP MENU switch) on the SY-61 board.</li> </ul>	 <p style="text-align: center;">A = B</p> <p style="text-align: center;">(A - B should be within a 1/4 scale of the section)</p>	<p>Position</p> <p>●CV102/SY-61(C-7)</p>
<ul style="list-style-type: none"> <li>• Press S103 on the SY-61 board again.</li> </ul>		<p>H side</p> <p>●CV101/SY-61(C-7)</p>

## 9-3. TAPE BEGINNING SENSOR OSCILLATION LEVEL CHECK

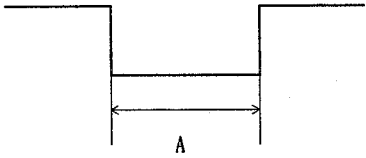
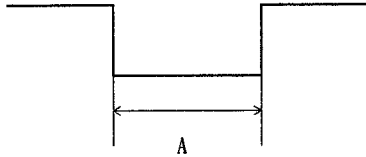
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• S101-Bit1/SV-82: ON</li> <li>• MODE: STOP</li> <li>• Minimize the center fluctuation in the oscilloscope's TRIG level.</li> <li>• Check that the waveform satisfies specification 1.</li> </ul> <p>Step 2</p> <ul style="list-style-type: none"> <li>• Place the tape beginning sensor near a screwdriver.</li> <li>• Check that specification 2 is satisfied.</li> <li>• After adjustment is completed, set S101-Bit 1 to OFF.</li> </ul>	<p>TP402/SY-64P(1-7)</p>  <p>Spec 1 : A = 200 mVp-p or more B = <math>5 \pm 1 \mu\text{sec}</math></p> <p>Spec 2 : Check that the mode is selected into FF.</p>	<p>TRIG: INT</p>

#### 9-4. TAPE END SENSOR OSCILLATION LEVEL CHECK



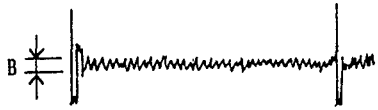



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• S101-Bit1/SV-82: ON</li> <li>• MODE: STOP</li> <li>• Minimize the center fluctuation in the oscilloscope's TRIG level.</li> <li>• Check that the waveform satisfies specification 1.</li> </ul> <p>Step 2</p> <ul style="list-style-type: none"> <li>• Place the tape end sensor near a screwdriver.</li> </ul> <p>Check that specification 2 is satisfied.</p> <ul style="list-style-type: none"> <li>• After adjustment is completed, set S101-Bit 1 to OFF.</li> </ul>	<p>TP404/SY-64P(1-6)</p>  <p>Spec 1 : A = 200 mVp-p or more B = <math>3.3 \pm 1.0 \mu\text{sec}</math></p> <p>Spec 2: Check that the mode is selected into REW.</p>	<p>TRIG: INT</p>

#### 9-5. COUNT H POSITION ADJUSTMENT (Up to S/N 14257)

• Before performing this adjustment, perform Sec. 13 TBC Alignment.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set RV303 on the SY-64P board (G-5) to the mechanical center position, and RV304 on the SY-64P board (G-6) to the following figure position.</li> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP309/SY-64P(F-4)</p>  <p>A = <math>10 \pm 1 \mu\text{sec}</math></p>	<p>RV305/SY-64P(G-5)</p> <p>TRIG: INT</p>
	<p>IC6 pin 6 or IC25 pin 12/SY-64P</p>  <p>A = <math>12 \pm 1 \mu\text{sec}</math></p>	<p>RV399/SY-64P(G-5)</p> <p>TRIG: INT</p>

# 9-6. IMPACT ERROR OUTPUT LEVEL ADJUSTMENT (Up to S/N 14257)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Check that RV303 on the SY-64P board (G-5) is set to the mechanical center position and that RV304 on the SV-64P board (G-6) is set to the figure position below.</li> </ul>  <ul style="list-style-type: none"> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> <li>• Turn S301 (H-8) or S302 (G-8) on the SY-64P board ON and OFF.</li> </ul>	<p>TP306/SY-64P(G-6) (GND: E4/SY-64P(I-6))</p> <p>S301: OFF</p>  <p>S301: ON</p>  <p><math>B/A &lt; 1/4</math></p>	<p>●RV303/SY-64P(G-5)</p> <p>Generally, RV303 is set to the mechanical center position.</p>
	<p>TP307/SY-64P(G-7) (GND: E4/SY-64P(I-6))</p> <p>S302: OFF</p>  <p>S302: ON</p>  <p><math>D/C &lt; 1/3</math></p>	<p>●RV304/SY-64P(G-6)</p> <p>Generally, RV304 is set to the figure position below.</p> 

## SECTION 10

### SERVO SYSTEM ALIGNMENT

#### 【Equipment Required】

- DC voltmeter
- Dual-trace oscilloscope
- Frequency counter
- Shorting clip
- Alignment tape CR2-1B PS
- Alignment tape CR5-2A PS
- Alignment tape CR5-1B PS

#### 【Video Signals Required】

- PAL video signal: This is a video signal provided with a specified sync signal that can be used for both color, and black and white systems.

#### 10-1. PREPARATION

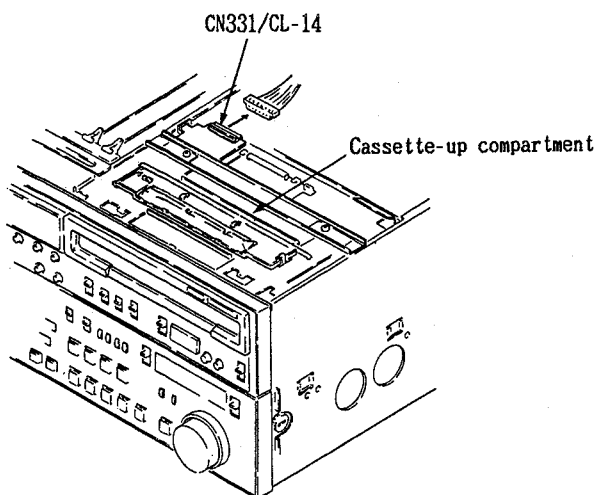
Since the machine may start runaway tape operation when the SV-83 board, reel table, and reel table rotation detecting element (DME) are replaced, the following adjustments should be performed before inserting a cassette tape.

- Section 10-3 Supply Reel FG Duty Cycle Adjustment
- Section 10-4 Take-up FG Duty Cycle Adjustment

When the SV-84P board and head drum are replaced, perform Section 10-9 Drum Free Speed Adjustment.

How to operate the machine without a cassette tape

- Remove CN331 on the CL-14 board and take out the cassette-up compartment.
- Set S101-Bit 1 on the SV-82 board to ON.
- When the STOP button is pressed, the threading ring rotates counterclockwise.




PLAY: Set S106 on the SY-61 board to ON, System Setup Item 902 to 1, and then press the PLAY button.

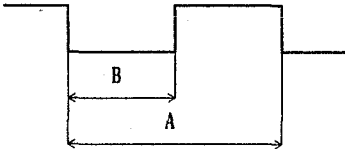
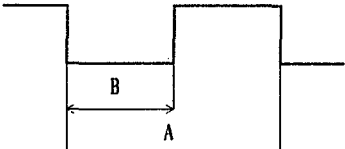
After adjustment is completed, set S106 to OFF and Item 902 to "0".



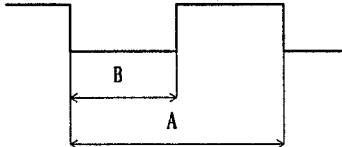
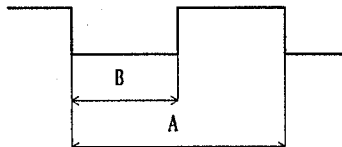
## 10-2. D/A OUTPUT VOLTAGE ADJUSTMENT

machine conditions for adjustment	specification	adjustments
• MODE: STOP	CH-1: TP103/SV-82(E-5) CH-2: TP101/SV-82(E-4)  A: Make the voltage at TP103 on the SV-82 same as that at TP101 on the SV-82 board.	⚙️RV101/SV-82(E-4)  TRIG(+): TP104/SV-82 (E-5)

## 10-3. SUPPLY REEL FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
• Play back alignment tape CR2-1B PS at about 10 minute-portion from tape top.	TP7/SV-83(D-8)  Duty cycle (B/A) = $50 \pm 5\%$	⚙️RV9/SV-83(B-4)  TRIG: TP7/SV-83(D-8)
	TP8/SV-83(D-7)  Duty cycle (B/A) = $50 \pm 5\%$	⚙️RV10/SV-83(C-4)  TRIG: TP8/SV-83(D-7)

#### 10-4. TAKE-UP REEL FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back alignment tape CR2-1B PS at about 10 minute-portion from tape top.</li> </ul>	TP9/SV-83(D-8)  Duty cycle $(B/A) = 50 \pm 5\%$	⌚RV11/SV-83(B-4)
	TP10/SV-83(D-8)  Duty cycle $(B/A) = 50 \pm 5\%$	⌚RV12/SV-83(A-4)  TRIG: TP10/SV-83(D-8)

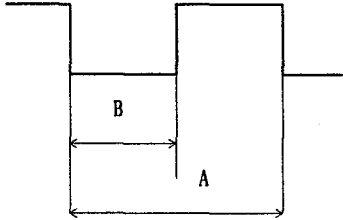
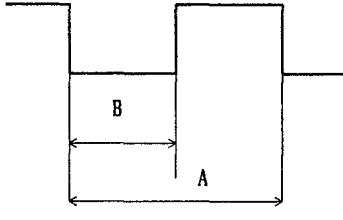
#### 10-5. TENSION SENSOR IMPRESSED VOLTAGE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S101-Bit1/SV-82: ON</li> <li>• MODE: STOP</li> <li>• Make adjustments only after the power has been ON for 30 seconds or more.</li> <li>• After adjustment is completed, set the S101-Bit1 to OFF.</li> </ul>	TP1/SV-83(A-8)  $+9.0 \pm 0.1 \text{ Vdc}$	⌚RV1/SV-83(B-7)

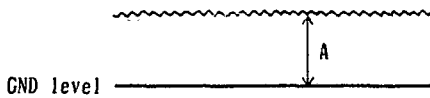
#### 10-6. TENSION SENSOR AMP OFFSET ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S101-Bit1/SV-82: ON</li> <li>• Using a shorting clip, short between TP4 on the SV-83 board and TP5 on the SV-83 board.</li> <li>• MODE: STOP</li> <li>• After adjustment is completed, remove the shorting clip and set S101-Bit 1 to OFF.</li> </ul>	TP3/SV-83(A-8)  $+2.5 \pm 0.04 \text{ Vdc}$	⌚RV2/SV-83(A-8)


## 10-7. CAPSTAN FG DUTY CYCLE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bars signal to the VIDEO IN connector.</li> <li>• CAPSTAN LOCK sw: 2FD</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	<p>TP1/SV-84P(C-7)</p>  <p><math>B/A = 50 \pm 5\%</math></p>	<p>RV2/SV-84P(C-6)</p> <p>TRIG(-): TP1/SV-84P(C-7)</p>
	<p>TP2/SV-84P(C-7)</p>  <p><math>B/A = 50 \pm 5\%</math></p>	<p>RV3/SV-84P(C-5)</p> <p>TRIG(-): TP2/SV-84P(C-2)</p>

## 10-8. CAPSTAN FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	<p>TP4/SV-84P(F-9)</p>  <p><math>A = 2.5 \pm 0.1 \text{ Vdc}</math></p>	<p>RV1/SV-84P(D-4)</p>

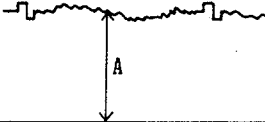
### 10-9. DRUM FREE SPEED ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• EXT/AUTO sw on connector Panel: EXT</li> <li>• Using a shorting clip, short between TP106 and TP107 on the SV-84P board.</li> <li>• S101-Bit4/SV-82; ON</li> <li>• Insert the BCT-20M cassette and and put the unit into the REC mode.</li> <li>• After adjustment is completed, remove the shorting clip. Return the EXT/AUTO switch to AUTO.</li> </ul>	<p>TP105/SV-84P(D-8)</p>  <p><math>A = 2.5 \pm 0.1 \text{ Vdc}</math></p>	<p>●RV102/SV-84P(C-2)</p>

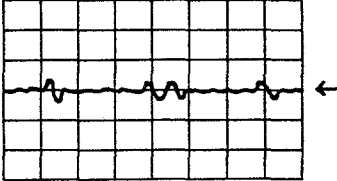


## 10-10. TRACKING CONTROL CENTERING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set the TRACKING control to the center click position.</li> <li>• Play back the alignment tape CR2-1B PS.</li> <li>• DT SELECT sw: OFF</li> <li>• CONF1 sw: OFF</li> </ul>	<p>TP102/SV-84P(H-1)</p> <p>TP101/SV-84P(H-6)</p> <p>Fluctuates.</p> <p>Note: When the waveform at TP101 fluctuates, measure it in its center.</p> <p><math>A = 0 \pm 0.1 \text{ msec}</math></p>	<p>●RV102/SV-82(D-1)</p> <p>TRIG(+): TP102/SV-84P(H-1)</p>

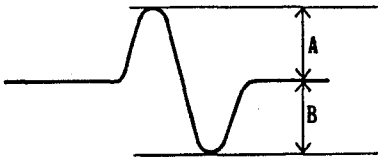
## 10-11. CAPSTAN STOP SERVO BIAS ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert alignment tape CR2-1B PS and put the unit into the SEARCH STILL mode.</li> <li>• Repeat FWD-STILL operation several times in the JOG mode. Check where the voltage at TP3 is minimized, then adjust.</li> </ul>	<p>TP3/SV-84P(G-4)</p>  <p><math>A = 0.3 \pm 0.02 \text{ Vdc}</math></p>	<p>RV103/SV-82(D-1)</p>

# 10-12. INSTANT START ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set the TRACKING control to the center click position.</li> <li>Insert alignment tape CR2-1B PS.</li> </ul> <p>Step 1</p> <ul style="list-style-type: none"> <li>MODE: PLAY</li> </ul>	<p>TP6/SV-84P(D-3)</p>  <p>After the servo is locked, adjust the waveform to the oscilloscope's center position. (Oscilloscope: DC mode)</p>	
<p>Step 2</p> <ul style="list-style-type: none"> <li>MODE: STILL</li> </ul>	<p>STILL mode </p> <p>PLAY mode </p> <p style="text-align: right;"><math>B</math></p> <p style="text-align: center;"><math>B = 0 \pm 0.2 \text{ Vdc}</math></p>	<p>RV4/SV-84P(E-5)</p>

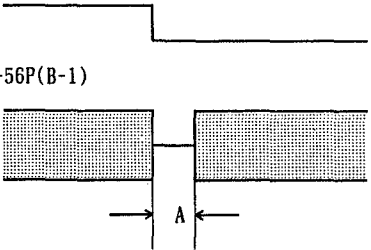
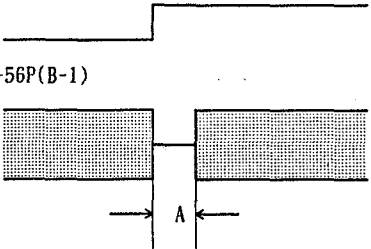
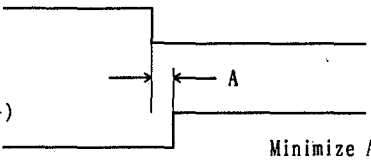
# 10-13. CAPSTAN ACCELERATION CORRECTION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Insert the BCT-90ML cassette.</li> <li>DT SELECT sw: SRC</li> <li>Turn the SEARCH dial and select five times and two times normal speeds.</li> </ul>	<p>TP3/SV-83(A-8)</p>  <p style="text-align: center;"><math>A = 0 \pm 0.15 \text{ Vp-p}</math> <math>B = 0 \pm 0.15 \text{ Vp-p}</math></p>	<p>RV8/SV-83(A-4)</p>

# 10-14. SV FRAMING/FRAMING PULSE WIDTH ADJUSTMENT


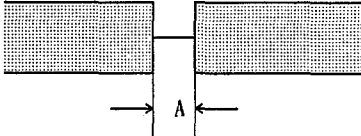
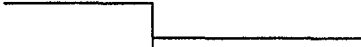
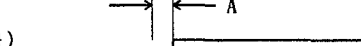
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a color-bars signal to the VIDEO IN and REF VIDEO IN connectors.</li> <li>MODE: EE</li> </ul>	<p>CH-1: TP201/SV-83(C-1) CH-2: TP207/SV-83(E-3)</p> <p>• Adjust RV210 on the SV-83 board so that one pulse is output every two fields.</p> <p>TP201</p> <p>TP207</p> <p>• Check that the pulse portion is in the first field.</p>	<p>RV210/SV-83(E-5)</p>
<p>Step 2</p>	<p>CH-1: TP211/SV-83(E-4) CH-2: TP210/SV-83(E-4)</p> <p>TP211</p> <p>TP210</p> <p>A</p> <p>A</p> <p>A = 8.0 ± 0.5 μsec</p>	<p>RV210/SV-83(E-5)</p> <p>Adjust RV210 to meet the both specifications of Steps 1 and 2.</p> <p>TRIG: TP207/SV-83(E-3)</p>

# 10-15. R/P HEAD Y SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• Insert alignment tape CR2-1B PS and put the unit into the PLAY mode.</li> <li>• Set the TRACKING control to the center click position.</li> </ul>	<p>TP901/DM-56P(C-1)</p>  <p>TP205/DM-56P(B-1)</p> <p>Minimize A. (10 <math>\mu</math>sec or less)</p>	<p>RV201/SV-83(D-2)</p> <p>TRIG (+): TP901/DM-56P(C-1)</p>
	<p>TP901/DM-56P(C-1)</p>  <p>TP205/DM-56P(B-1)</p> <p>Minimize A. (15 <math>\mu</math>sec or less)</p>	<p>RV202/SV-83(D-2)</p> <p>TRIG (-): TP901/DM-56P(C-1)</p>
	<p>TP901/DM-56P(C-1)</p> <p>TRIG(+)</p>  <p>TRIG(-)</p> <p>Minimize A. (5 <math>\mu</math>sec or less)</p> <p>Select the TRIG SLOPE (+/-) and check that the phase difference satisfies the specification.</p>	<ul style="list-style-type: none"> <li>• Fine adjustment</li> <li>RV201/SV-83(D-2)</li> <li>RV202/SV-83(D-2)</li> </ul> <p>TRIG: TP901/DM-56P(C-1)</p>

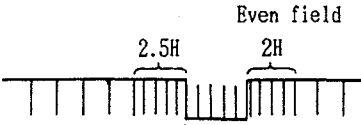
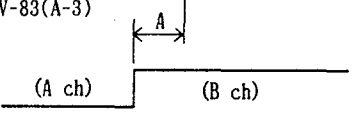
• After adjustment is completed, set S101-Bit4 on the SV-82 board and S1 on the SV-83 board to the former position.

# 10-16. R/P HEAD C SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• Insert alignment tape CR2-1B PS and put the unit into the PLAY mode.</li> <li>• Set the TRACKING control to the center click position.</li> </ul>	TP902/DM-56P(F-1)  TP507/DM-56P(F-1)  Minimize A. Spec 1 (10 $\mu$ sec or less)	RV206/SV-83(B-3)  TRIG (+): TP902/DM-56P(F-1)
	TP902/DM-56P(F-1) TRIG(-)  TRIG(+)  Minimize A. (5 $\mu$ sec or less)  Select the TRIG SLOPE (+/-) and check that the phase difference satisfies specification 2.	<ul style="list-style-type: none"> <li>• Fine adjustment</li> </ul> RV206/SV-83(B-3)  TRIG (+/-): TP902/DM-56P(F-1)

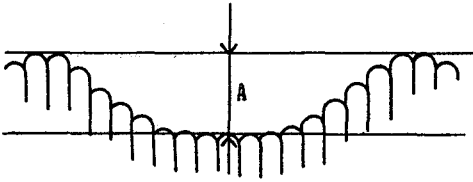
• After adjustment is completed, make Section 10-19-8 DT Head Y/C Switching Pulse Adjustment.

# 10-17. REC DRUM LOCK PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• AUTO/EXT sw on the connector panel: AUTO</li> <li>• Supply a color-bar signal.</li> <li>• S101- Bit4/SV-82: ON</li> <li>• S1/SV-83: ON</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-20G and put the unit into the REC mode.</li> <li>• CONF1 sw: OFF</li> <li>• After adjustment is completed, set S101-Bit4 on the SV-82 board and S1 on the SV-83 board to the former position.</li> </ul>	TP201/SV-83(C-1)  TP204/SV-83(A-3)  $A = 2.25 \pm 0.1 H$	RV202/SV-84P(C-1)  TRIG: TP201/SV-83(C-1)




# 10-18. PICTURE SPLITTING COMPENSATION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a monoscope signal on alignment tape CR5-2A PS.</li> </ul>	<p>CN208-15B/SV-84P(E-9)</p>  <p>A: Minimize.</p>	<ul style="list-style-type: none"> <li>●RV100/SV-84P(D-1)</li> <li>●RV101/SV-84P(E-2)</li> </ul>

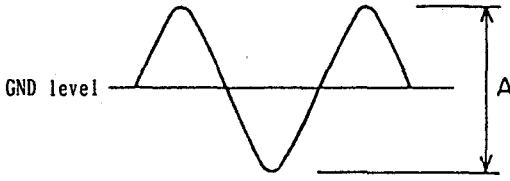
## 10-19. DT SERVO ADJUSTMENT

Before performing the DT Servo Adjustment, make Section 12-6 DM-56P Board Adjustment.


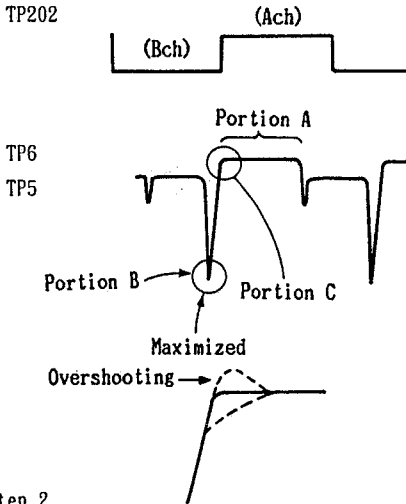
### 10-19-1. Bimorph Drive Waveform Amplitude Limit Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove the slip ring connector (CN661).</li> <li>Fully turn RV205 and RV206 on the DT-13 board fully counter-clockwise.</li> <li>Turn ON S201-Bit2 on the DT-13 board. Then, press S202 on the DT-13 board (D305 lights up). Adjust RV2 while D305 lights up.</li> <li>After adjustment is completed, set S201-Bit2 on the DT-13 board and connector CN661 of the slip ring to the former position.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) CH-2: TP8/DT-15(A-1)</p>  <p style="text-align: center;">GND level</p> <p style="text-align: center;"><math>A = +200 \pm \frac{1}{2} V</math> <math>B = -200 \pm \frac{1}{2} V</math></p>	<p>RV2/DT-15(A-2)</p> <p>TRIG: TP8/DT-15(A-1)</p>

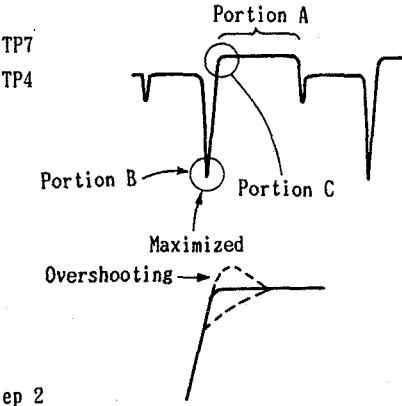
### 10-19-2. Distortion/Erasure Waveform Tentative Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Remove connector CN661 of the slip ring.</li> <li>Turn ON S201-Bit2 on the DT-13 board. Then, press S202 on the DT-13 board (D305 lights up). Adjust RV205 and RV206 while D305 lights up.</li> <li>After adjustment is completed, set S201-Bit2 on the DT-13 board to the former position.</li> <li>Insert connector CN661 of the slip ring.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) CH-2: TP8/DT-15(A-1)</p>  <p style="text-align: center;">GND level</p> <p style="text-align: center;"><math>A = 200 \pm 10 V_{p-p}</math></p>	<p>CH-A RV205/DT-13(A-9) CH-B RV206/DT-13(B-9)</p> <p>TRIG(+): TP8/DT-15(A-1)</p>

### 10-19-3. Strain Gage/Loop Gain Adjustment (CH-A)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S1 on the DT-14P board and S201-Bit1 on the DT-13 board.</li> <li>• Set RV2 and RV3 on the DT-14P board as shown below.</li> </ul>  <ul style="list-style-type: none"> <li>• Play back a color-bars signal on alignment tape CR5-1B PS and put the unit into the JOG mode.</li> <li>• DT SELECT sw: VAR</li> </ul> <ul style="list-style-type: none"> <li>• After adjustment is completed, set S1 on the DT-14P board and S201-Bit1 on the DT-13 board to the former position.</li> </ul>	<p>CH-1: TP6/DT-14P (A-6) } ADD mode CH-2: TP5/DT-14P(INVERT)(B-5) }</p> <p>Step 1</p> <ul style="list-style-type: none"> <li>• Make horizontal at portion A using the CH-2 VARIABLE control of an oscilloscope.</li> </ul>  <p>Step 2</p> <ul style="list-style-type: none"> <li>• Slowly turn the search dial so that the output at portion B is maximized.</li> <li>• Sharpen the sag level so that no overshoot appear at portion C.</li> </ul> <p>Repeat Steps 1 and 2, then check.</p>	<p>RV5/DT-14P(B-8)</p> <p>TRIG(-): TP202/DT-14P(D-7)</p>

# 10-19-4. Strain Gage/Loop Gain Adjustment (CH-B)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S1 on the DT-14P board and S201-Bit1 on the DT-13 board.</li> <li>• Set RV2 and RV3 on the DT-14P board as shown in figure in Section 10-19-3.</li> <li>• Play back a color-bars signal on alignment tape CR5-1B PS and put the unit into the JOG mode.</li> <li>• DT SELECT sw: VAR</li> </ul>	<p>CH-1: TP7/DT-14P (A-8) } ADD mode CH-2: TP4/DT-14P(INVERT)(A-3) }</p> <p>Step 1</p> <ul style="list-style-type: none"> <li>• Make horizontal at portion A using the CH-2 VARIABLE control of an oscilloscope.</li> </ul> <p>TP202</p>  <p>Step 2</p> <ul style="list-style-type: none"> <li>• Slowly turn the search dial so that the output at portion B is maximized.</li> <li>• Sharpen the sag level so that no overshoot appear at portion C.</li> </ul> <p>Repeat Steps 1 and 2, then check.</p>	<p>RV4/DT-14P(B-7)</p> <p>TRIG(+): TP202/DT-14P(D-7)</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S1 on the DT-14P board and S201-Bit1 on the DT-13 board to the former position.</li> </ul>		

# 10-19-5. Drive Waveform Amplifier Gain Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>DT SELECT sw: VAR</li> <li>Play back a color-bars signal on alignment tape CR5-1B PS.</li> <li>Turn ON S1 on the DT-14P board and S201-Bit1 on the DT-13 board.</li> </ul> <p>After adjustment is completed, set S1 on the DT-14P board and S201-Bit1 on the DT-13 board to the former position.</p>	<p>TP10/DT-14P(C-1)</p> <p>Minimize the waveform change.</p>	<p>CH-B RV2/DT-14P(A-4) CH-A RV3/DT-14P(B-5)</p> <p>TRIG: TP202/DT-14P(D-7)</p>

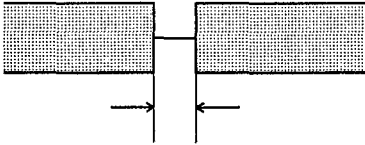
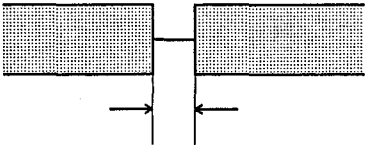
# 10-19-6. Sync Switching Pulse Position Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Turn ON S1 on the DT-14P board and S201-Bit1 on the DT-13 board.</li> <li>Play back a color-bars signal on alignment tape CR5-1B PS.</li> <li>DT SELECT sw: VAR</li> </ul> <p>After adjustment is completed, set S1 on the DT-14P board and S201-Bit1 on the DT-13 board to the former position.</p>	<p>CH-1: TP301/DT-14P(E-6) CH-2: TP202/DT-14P(D-7)</p>	<p>When TRIG SLOPE is +: CH-A RV203/SV-83(D-3)</p> <p>When TRIG SLOPE is -: CH-B RV204/SV-83(D-3)</p> <p>TRIG(+/-): TP202/DT-14P(D-7)</p>

## 10-19-7. DT V Timing Adjustment

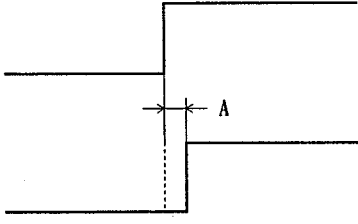

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• Play back a color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>CH-1: TP301/DT-14P(E-6)</p> <p>CH-2: TP306/DT-14P(D-3)</p>	<p>●RV304/DT-14P(C-4)</p> <p>TRIG(+): TP306/DT-14P(D-3)</p>

# 10-19-8. DT Head Y/C Switching Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• S201-Bit1/DT-13: ON</li> <li>• S1/DT-14P: ON</li> <li>• Insert alignment tape CR2-1B PS and put the unit into the PLAY mode.</li> <li>• Using a shorting clip, short between TP11 on the DT-14P board and GND.</li> </ul>	<p>TP205/DM-56P(B-1)</p>  <p>Minimize this gap. (20 <math>\mu</math>sec or less)</p> <p>Select the TRIG SLOPE (+/-).</p>	<p>RV203/DT-14P(C-5)</p> <p>TRIG: TP901/DM-56P(C-1)</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set S201-Bit1 on the DT-13 board and S1 on the DT-14P board to the former position. Remove the shorting clip.</li> </ul>	<p>TP505/DM-56P(H-4)</p>  <p>(20 <math>\mu</math>sec or less)</p> <p>If the specification is not satisfied, repeat Section 10-19-6 Sync Switching Pulse Position Adjustment.</p> <p>Select the TRIG SLOPE (+/-).</p>	<p>TRIG: TP902/DM-56P(F-1)</p>



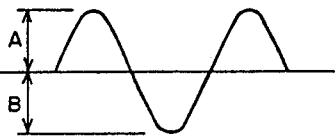
### 10-19-9. Anti-Rolling Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• Play back a color-bars signal on alignment tape CR5-1B PS and put the unit into the STILL mode.</li> <li>• Using a shorting clip, short between TP305 on the DT-14P board and GND.</li> </ul>	<p>CH-1: TP308/DT-14P(D-5) CH-2: TP301/DT-14P(E-6)</p> <p>When it is shorted with ground</p>  <p>TP308</p> <p>When it is not shorted</p>  <p>TP301 (Sync)</p> <p>When removing the shorting clip, adjust to the same position as in shorting. <math>A = 0 \pm 0.5 H</math></p>	<p>RV305/DT-14P(D-5)</p> <p>TRIG: TP202/DT-14P(D-7)</p>

### 10-19-10. Distortion/Erasure Waveform Offset Adjustment

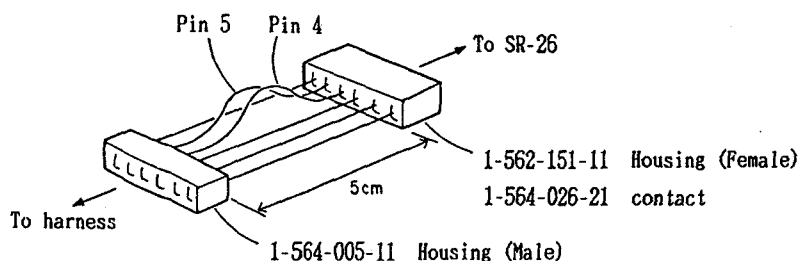
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• MODE: BE</li> </ul>	<p>TP10/DT-15(A-1) TP8/DT-15(A-1)</p> <p>Each dc voltage should be within <math>0 \pm 0.5 V_{dc}</math>.</p>	<p>CH-A RV6/DT-14P(A-1) CH-B RV7/DT-14P(A-1)</p>

### 10-19-11. Distortion/Erasure Waveform Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn ON S201-Bit2 on the DT-13 board and press S202 on the DT-13 board.</li> </ul>	<p>CH-1: TP10/DT-15(A-1) CH-2: TP8/DT-15(A-1)</p>  <p>GND level</p> <p><math>A = +190 \pm 5 V</math> <math>B = -190 \pm 5 V</math></p> <p>Note: RV should be turned slowly so that the value does not exceed 400 Vp-p.</p>	<p>CH-A RV205/DT-13(A-9) CH-B RV206/DT-13(B-9)</p> <p>TRIG: TP8/DT-15(A-1)</p>

## 10-20. Rotary Erase Current Adjustment

• For the rotary erase current adjustment, prepare the following extension harnesses for measuring;



machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• VIDEO IN: Color-bar signal</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Remove connector CN662 on the SR-26 board and connect the above extension harness between CN662 and harness.</li> <li>• Connect a current probe to pins 4 and 5 of the extension harness.</li> <li>• Insert the BCT-20G cassette.</li> <li>• Push the VIDEO INSERT button and push the EDIT and PLAY buttons simultaneously.</li> </ul>	<p>4-pin harness/extension harness 5-pin harness/extension harness</p> <p><math>A = 250 \pm 4 \text{ mAp-p}</math>  <math>B = 55 \pm 1.5 \%</math>  <math>(A = 100 \%)</math></p> <p>Spectrum analyzer</p> <p>Peak level</p> <p>Frequency = <math>10 \pm 0.5 \text{ MHz}</math></p>	<p>CH-A Current ●RV1/RE-34(B-1) Frequency ●LV1/RE-34(B-1)</p> <p>CH-B Current ●RV2/RE-34(A-1) Frequency ●LV2/RE-34(B-1)</p>
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Push the VIDEO INSERT button and push the ASSEMBLE button.</li> <li>• After adjustment is completed, remove the extension harness and connect connector CN662.</li> </ul>	<p>Disappear the waveform about 6 seconds later.</p>	





## SECTION 11

### AUDIO/TIME CODE ALIGNMENT

#### 【Equipment Required】

- Audio oscillator
- Audio attenuator
- Vacuum voltmeter
- Spectrum analyzer
- Oscilloscope
- Level meter
- Alignment tapes CR8-1B PS, CR8-1A PS and CR5-1B PS

#### CR5-1B PS (8-960-096-91) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep Marker 1, 2, 4, 6, 8, 10, 12 MHz	No-Signal
2:00		
5:00	60% H. Sweep (CTDM) Marker 0.5, 1, 2, 3, 4, 5 MHz	
8:00	Pulse & Bar (CTDM)	
11:00	Multi Burst Y: 0.5, 1, 2, 4, 5, 5.5 MHz C: 0.2, 0.5, 1, 1.5, 2 MHz	
	Pulse & Bar	400Hz Sine Wave 25kHz Deviation
14:00		
16:30		
17:00	100% Color Bars	75kHz Deviation
19:00	50% Bowtie & 10T	No-Signal
22:00	Line 17A Signal	
24:00	Quad Phase	
26:00	Flat Field	
28:00	100% Color Bars with dropout	
30:00	Composite H. Sweep with VISC	

#### CR8-1A PS (8-960-098-45) Contents

TIME min, sec	AUDIO TRACK
0:00	1kHz, 0 VU
2:55	Blank
3:00	10kHz, -10 VU
4:55	Blank
5:00	1kHz, -20 VU
5:55	Blank
6:00	40, 7k, 10k, 15kHz
7:55	Blank
8:00	1kHz, 0 VU
10:00	

TIME min, sec	AUDIO TRACK	VIDEO TRACK	CTL TRACK
00:00	1 kHz OVU	Black Burst	CTL
02:30	Blank (only Bias)	Black Burst	CTL
03:00	15 kHz OVU	Black Burst	CTL
05:00	1 kHz -20VU	Black Burst	CTL
06:00	40 Hz -20VU	Black Burst	CTL
	7 kHz -20VU		
	10 kHz -20VU		
	15 kHz -20VU		
08:00	1 kHz OVU	_____	1 kHz sine wave
10:00			

## 【Switch Setting】

## • Function Control Panel

CONF switch	: OFF
PB, PB/EE switch	: PB/EE
CTL/TC/U-BIT switch	: CTL
DT SELECT switch	: OFF

## • Level Control Panel

AUDIO MONITOR switch	: ST/MIX
AUDIO MONITOR switch	: LNG
AUDIO LIMITER switch	: OFF
AUDIO MIXING switch	: OFF
TRACKING control	: FIXED
REMOTE/LOCAL switch	: LOCAL

## • Subcontrol Panel

AFM INPUT switch	: CH-1/-2
AUDIO MONITOR switch	: ST
DOLBY NR switch	: OFF
TBC control switch	: INT
VIDEO switch	: PRESET
CHROMA switch	: PRESET
SET UP switch	: PRESET
Y/C DELAY switch	: PRESET
HUE switch	: PRESET
TBC BYPASS switch	: OFF
VIDEO INPUT switch	: AUTO
REC INHIBIT switch	: OFF
CAPSTAN LOCK switch	: 2/4FD

## • Connector Panel

REF VIDEO switch	: AUTO
REF VIDEO 75Ω termination	: ON
AUDIO CH-1 LEVEL switch	: HIGH
AUDIO CH-1 600Ω switch	: OFF
AUDIO CH-2 LEVEL switch	: HIGH
AUDIO CH-2 600Ω switch	: OFF
AUDIO CH-3 LEVEL switch	: HIGH
AUDIO CH-3 600Ω switch	: OFF
AUDIO CH-4 LEVEL switch	: HIGH
AUDIO CH-4 600Ω switch	: OFF

## 【Blank Tape】

The "Blank Tape" described in the adjustment item indicates the tape on which no video and audio signals are recorded.

## 【Audio System Adjustment Procedure】

For LNG audio system adjustment, make adjustments in the order of Sections 11-1 through 11-35.

For AFM audio system adjustment, make adjustments in the order of Sections 11-36 through 11-49.

## • Item 900 Series

For setting, refer to the Setup in 1-7-1. To display this item, turn the SEARCH dial while pressing the PLAY button.

Note: Item 900 series are used only at the factory.

Setting should not be thus changed. When setting is changed, be sure to return it to the initial value.

## 11-1. REC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul>	CH-1: TP103/AU-75P(H-1) CH-2: TP203/AU-75P(G-1)  $-10 \pm 0.1 \text{ dBs}$	CH-1: ⌚RV101/BF-28(A-5) (Panel display: CH-1 REC VR) CH-2: ⌚RV201/BF-28(A-4) (Panel display: CH-2 REC VR)

## 11-2. LINE OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul>	CH-1: TP103/AU-76P(D-1) CH-2: TP203/AU-76P(D-1)  $-10 \pm 0.1 \text{ dBs}$	CH-1: ⌚RV105/AU-76P(C-6) CH-2: ⌚RV205/AU-76P(C-6)

## 11-3. OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul>	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  $+4 \pm 0.1 \text{ dBm}$	CH-1: ⌚RV101/CP-161A(A-1) ⌚RV151/CP-111(B-2) CH-2: ⌚RV201/CP-161A(B-1) ⌚RV251/CP-111(B-1)

## 11-4. MONITOR OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal (4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> <li>Insert the BCT-20G cassette.</li> <li>Set System Setup Item 103 to 1.</li> <li>After adjustment is completed, set Item 103 to 0.</li> </ul>	AUDIO OUT CH-1/CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-2/CH-4 connector (Terminated in 600 ohms.)  $+4 \pm 0.1 \text{ dBm}$	CH-1, CH-3: ⌚RV501/CP-161A(E-1) ⌚RV551/CP-111(F-2) CH-2, CH-4: ⌚RV601/CP-161A(F-1) ⌚RV651/CP-111(E-1)

### 11-5. LIMITER LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>AUDIO INPUT LEVEL sw: LOW</li> <li>AUDIO LIMITER sw: ON</li> <li>Supply a 1kHz signal (-30dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>MODE: EE</li> </ul> <p>• After adjustment is completed, set the AUDIO INPUT LEVEL switch to HIGH and the AUDIO LIMITER switch to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p><math>12 \pm 0.5 \text{ dBm}</math></p>	<p>CH-1: RV107/AU-75P(H-9)</p> <p>CH-2: RV207/AU-75P(F-9)</p>

### 11-6. REC/PB DOLBY NR SKEWING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a <math>1 \pm 0.1 \text{ kHz}</math> signal (-26dBs) to TP101/E101(CH-1) and TP201/E201(CH-2) on the AU-75P board.</li> <li>MODE: EE</li> <li>DOLBY NR sw: ON</li> </ul>	<p>CH-1: TP103/AU-75P(H-1) CH-2: TP203/AU-75P(G-1)</p> <p><math>-10 \pm 0.1 \text{ dBs}</math></p>	<p>Finely tune using an audio oscillator or attenuator.</p>
<ul style="list-style-type: none"> <li>DOLBY NR sw: ON</li> <li>Supply a <math>17 \pm 0.05 \text{ kHz}</math> signal (-26dBs) to TP101/E101(CH-1) and TP201/E201(CH-2) on the AU-75P board.</li> </ul> <p>• After adjustment is completed, set the DOLBY NR switch to OFF.</p>	<p>CH-1: TP103/AU-75P(H-1) CH-2: TP203/AU-75P(G-1)</p> <p><math>-18.3 \pm 0.1 \text{ dBs}</math></p>	<p>CH-1: LV101/AU-75P(J-5)</p> <p>CH-2: LV201/AU-75P(E-5)</p>

11-7. CONF PB DOLBY NR SKEWING TUNING ADJUSTMENT  
(Up to S/N 14380)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Using a shorting clip, short between TP301 and E301 on the AU-76P board.</li> <li>• Supply a <math>1 \pm 0.1</math> kHz signal (<math>-26</math> dBs) to TP101/E301(CH-1) and TP201/E301(CH-2) on the AU-76P board.</li> <li>• MODE: EE</li> <li>• DOLBY NR sw: ON</li> </ul>	CH-1: TP102/AU-76P(E-8) CH-2: TP202/AU-76P(F-5)  $-10 \pm 0.1$ dBs	Finely tune using an audio oscillator or attenuator.
<ul style="list-style-type: none"> <li>• DOLBY NR sw: ON</li> <li>• Supply a <math>17 \pm 0.05</math> kHz signal to TP101/E301(CH-1) and TP201/E301(CH-2) on the AU-76P board.</li> <li>• MODE: EE</li> <li>• After adjustment is completed, remove the shorting clip between TP301 and E301. Set the DOLBY NR switch to OFF.</li> </ul>	CH-1: TP102/AU-76P(E-8) CH-2: TP202/AU-76P(F-5)  $-18.3 \pm 0.1$ dBs	CH-1: ● LV101/AU-76P(D-5) CH-2: ● LV201/AU-76P(F-6)

# 11-8. R/P HEAD PB FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

## 11-8-1. Oxide R/P Head PB Frequency Response Adjustment (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments																																																												
<ul style="list-style-type: none"><li>• DOLBY NR sw: OFF</li><li>• S301/AU-76P: OFF</li><li>• Play back 40Hz, 1kHz, 7kHz, 10kHz, and 15kHz signals on alignment tape CR8-1A PS.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq</th><th>Level</th></tr><tr><td>40Hz</td><td>Ref. <math>\pm \frac{1}{2}</math> dB</td></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>7kHz</td><td>Ref. <math>\pm 0.3</math>dB</td></tr><tr><td>10kHz</td><td>Ref. <math>\pm 0.5</math>dB</td></tr><tr><td>15kHz</td><td>Ref. <math>\pm 0.5</math>dB</td></tr></table> <p>If the specification is not satisfied, set the switches as described below, then readjust.</p> <ul style="list-style-type: none"><li>• When the high-frequency level is higher than the specified value. Set and readjust the switches so that the level is lower.</li><li>• When the high-frequency level is lower than the specified value. Set and readjust the switches so that the level is Higher.</li></ul> <p>High-frequency level goes low.      High-frequency level goes high.</p> <table><tr><td>Bit-4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-3</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>Bit-1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr></table> <p>Note: Setting of S102 and S202 on the AU-76P board should be the same position.</p>	Freq	Level	40Hz	Ref. $\pm \frac{1}{2}$ dB	1kHz	Ref.	7kHz	Ref. $\pm 0.3$ dB	10kHz	Ref. $\pm 0.5$ dB	15kHz	Ref. $\pm 0.5$ dB	Bit-4	0	0	0	0	0	0	0	0	1	1	1	Bit-3	0	0	0	0	1	1	1	1	1	1	1	Bit-2	0	0	1	1	0	0	1	1	0	0	1	Bit-1	0	1	0	1	0	1	0	1	0	1	1	<ul style="list-style-type: none"><li>• 3kHz, 7kHz adjustment CH-1: RV111/AU-76P(E-1) CH-2: RV211/AU-76P(F-1)</li><li>• 10kHz, 15kHz adjustment CH-1: RV110/AU-76P(D-2) CH-2: RV210/AU-76P(E-2)</li></ul> <p>CH-1: S102/AU-76P(D-3) CH-2: S202/AU-76P(E-3)</p> <p>0:SW OFF 1:SW ON</p> <p>↑ Preset position</p>
Freq	Level																																																													
40Hz	Ref. $\pm \frac{1}{2}$ dB																																																													
1kHz	Ref.																																																													
7kHz	Ref. $\pm 0.3$ dB																																																													
10kHz	Ref. $\pm 0.5$ dB																																																													
15kHz	Ref. $\pm 0.5$ dB																																																													
Bit-4	0	0	0	0	0	0	0	0	1	1	1																																																			
Bit-3	0	0	0	0	1	1	1	1	1	1	1																																																			
Bit-2	0	0	1	1	0	0	1	1	0	0	1																																																			
Bit-1	0	1	0	1	0	1	0	1	0	1	1																																																			

11-8-2. Metal R/P Head PB Frequency Response Adjustment  
(DOLBY OFF)

machine conditions for adjustment	specifications	adjustments								
<ul style="list-style-type: none"><li>• System setup menu ITEM 901: 1</li><li>• DOLBY NR sw: OFF</li><li>• S301/AU-76P: OFF</li><li>• Play back 1kHz, 10kHz, and 15kHz signals on alignment tape CR8-1B PS.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>10kHz</td><td>Ref. <math>\pm 0.3</math>dB</td></tr><tr><td>15kHz</td><td>Ref. <math>\pm 0.5</math>dB</td></tr></table>	Freq.	Level	1kHz	Ref.	10kHz	Ref. $\pm 0.3$ dB	15kHz	Ref. $\pm 0.5$ dB	<p>CH-1:</p> <p>●RV114/AU-76P(D-2)</p> <p>CH-2:</p> <p>●RV214/AU-76P(F-2)</p>
Freq.	Level									
1kHz	Ref.									
10kHz	Ref. $\pm 0.3$ dB									
15kHz	Ref. $\pm 0.5$ dB									
<ul style="list-style-type: none"><li>• After adjustment is completed, set system setup menu ITEM 901 to "0".</li></ul>										



# 11-9. CONF1 HEAD PB FREQUENCY RESPONSE TENTATIVE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments																																																												
<ul style="list-style-type: none"><li>• DOLBY NR sw: OFF</li><li>• S301/AU-76P: ON</li><li>• Play back 40Hz, 1kHz, 7kHz, 10kHz, and 15kHz signals on alignment tape CR8-1A PS.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq</th><th>Level</th></tr><tr><td>40Hz</td><td>Ref. <math>\pm 1.5</math> dB</td></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>7kHz</td><td>Ref. <math>\pm 0.5</math> dB</td></tr><tr><td>10kHz</td><td>Ref. <math>\pm 0.5</math> dB</td></tr><tr><td>15kHz</td><td>Ref. <math>\pm 1</math> dB</td></tr></table> <p>If the specification is not satisfied, set the switches as described below, then readjust.</p> <ul style="list-style-type: none"><li>• When the high-frequency level is higher than the specified value. Set and readjust the switches so that the level is lower.</li><li>• When the high-frequency level is lower than the specified value. Set and readjust the switches so that the level is Higher.</li></ul> <p>High-frequency level goes low.      High-frequency level goes high.</p> <table><tr><td>Bit-4</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-3</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>Bit-2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td></tr><tr><td>Bit-1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr></table> <p style="text-align: center;">↑ Preset position</p>	Freq	Level	40Hz	Ref. $\pm 1.5$ dB	1kHz	Ref.	7kHz	Ref. $\pm 0.5$ dB	10kHz	Ref. $\pm 0.5$ dB	15kHz	Ref. $\pm 1$ dB	Bit-4	0	0	0	0	0	0	0	0	1	1	1	Bit-3	0	0	0	0	1	1	1	1	1	1	1	Bit-2	0	0	1	1	0	0	1	1	0	0	1	Bit-1	0	1	0	1	0	1	0	1	0	1	1	<ul style="list-style-type: none"><li>• 3kHz, 7kHz adjustment CH-1: RV102/AU-76P(E-8) CH-2: RV202/AU-76P(F-7)</li><li>• 10kHz, 15kHz adjustment CH-1: RV101/AU-76P(D-8) CH-2: RV201/AU-76P(F-8)</li></ul> <p>CH-1: S101/AU-76P(D-8) CH-2: S201/AU-76P(F-8)</p> <p>0:SW OFF 1:SW ON</p>
Freq	Level																																																													
40Hz	Ref. $\pm 1.5$ dB																																																													
1kHz	Ref.																																																													
7kHz	Ref. $\pm 0.5$ dB																																																													
10kHz	Ref. $\pm 0.5$ dB																																																													
15kHz	Ref. $\pm 1$ dB																																																													
Bit-4	0	0	0	0	0	0	0	0	1	1	1																																																			
Bit-3	0	0	0	0	1	1	1	1	1	1	1																																																			
Bit-2	0	0	1	1	0	0	1	1	0	0	1																																																			
Bit-1	0	1	0	1	0	1	0	1	0	1	1																																																			
<ul style="list-style-type: none"><li>• After adjustment is completed, set S301 on the AU-76P board to OFF.</li></ul>																																																														

# 11-10. R/P HEAD PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 1kHz signal on alignment tape CR8-1B PS.</li> </ul>	CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)  $-10 \pm 0.2 \text{ dBs}$	CH-1: ⌚RV112/AU-76P(D-1) CH-2: ⌚RV212/AU-76P(F-1)
	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  $+4 \pm 0.2 \text{ dBm}$	CH-1: ⌚RV102/BF-28(A-4) (Panel display: CH-1 PB VR) CH-2: ⌚RV202/BF-28(A-3) (Panel display: CH-2 PB VR)

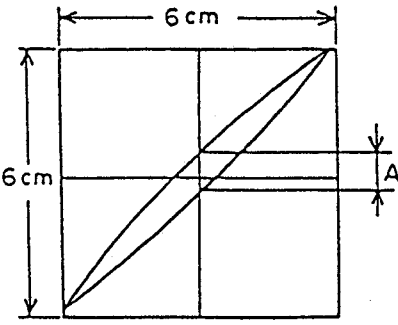
# 11-11. CONF1 HEAD PB LEVEL TENTATIVE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S301/AU-76P: ON</li> <li>• Play back a 1kHz signal on alignment tape CR8-1B PS.</li> </ul>	CH-1: TP102/AU-76P(E-8), E101/AU-76P(D-7) CH-2: TP202/AU-76P(F-5), E201/AU-76P(F-5)  $-10 \pm 0.2 \text{ dBs}$	CH-1: ⌚RV103/AU-76P(E-8) CH-2: ⌚RV203/AU-76P(F-7)
	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  $+4 \pm 0.2 \text{ dBm}$	CH-1: ⌚RV104/AU-76P(B-8) CH-2: ⌚RV204/AU-76P(B-8)

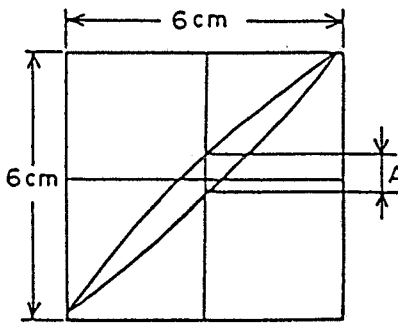
# 11-12. TIME CODE/AUDIO CH-1/2 OSCILLATION FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	TP1/TC-40P(B-5) TP2/TC-40P(A-5) TP3/TC-40P(C-5)  $82 \pm 1 \text{ kHz}$	⌚RV4/TC-40P(B-1)

### 11-13. CONF1 HEAD PB PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S301/AU-76P: ON</li> <li>• DOLBY NR sw: OFF</li> <li>• Play back a 10kHz signal on alignment tape CR8-1A PS.</li> <li>• Display the lissajous's waveform.</li> </ul> <p>• After adjustment is completed, set S301 on the AU-76P board to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm (Within } \pm 5^\circ \text{)}</math></p>	<p>CH-1: ●RV115/AU-76P(C-7)</p> <p>CH-2: ●RV215/AU-76P(B-7)</p>

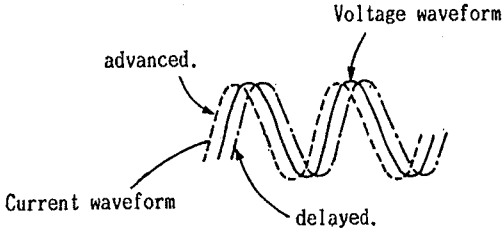
### 11-14. R/P HEAD PB PHASE ADJUSTMENT


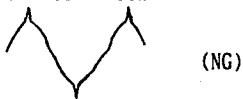
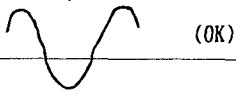
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• S301/AU-76P: ON</li> <li>• DOLBY NR sw: OFF</li> <li>• Play back a 10kHz signal on alignment tape CR8-1A PS.</li> <li>• Display the lissajous's waveform.</li> </ul> <p>• After adjustment is completed, set S301 on the AU-76P board to OFF.</p>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm (Within } \pm 5^\circ \text{)}</math></p>	<p>CH-1: ●RV811/AU-75P(G-7)</p> <p>CH-2: ●RV821/AU-75P(G-7)</p>

### 11-15. FULL ERASE OSCILLATION FREQUENCY CHECK

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li> </ul>	<p>TP7/TC-40P(C-4)</p> <p><math>60 \pm 10 \text{ kHz}</math></p>	

# 11-16. ERASE CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1 (CH-1 ERASE)</p> <ul style="list-style-type: none"> <li>Insert the BCT-20M blank cassette and put the unit into the AUDIO CH-1 INSERT mode.</li> </ul>	<p>Voltage: TP3/TC-40P(C-5) Current: TP6/TC-40P(B-6) E401/TC-40P(C-5)</p>  <p>Specification same phase.</p>	<p>S3-1: ON (preset)</p> <ul style="list-style-type: none"> <li>For phase advance, set ON S3-3, S3-2, and both S3-3 and S3-2 to ON in order.</li> <li>For phase delay, set S3-1 to OFF, then set both S3-2 and S3-3, S3-2 and S3-3 to ON.</li> </ul>
<p>Step 2 (CH-2 ERASE)</p> <ul style="list-style-type: none"> <li>Insert the BCT-20M blank cassette and put the unit into the AUDIO CH-2 INSERT mode.</li> </ul>	<p>Voltage: TP2/TC-40P(A-5) Current: TP5/TC-40P(A-6) E401/TC-40P(C-5)</p> <p>Specification same phase.</p>	<p>S2-1: ON (preset)</p> <ul style="list-style-type: none"> <li>For phase advance, set S2-3, S2-2, and both S2-2 and S2-3 to ON.</li> <li>For phase delay, set S2-1 to OFF, then set both S2-2 and S2-3, S2-2 and S2-3 to ON.</li> </ul>
<p>Step 3 (TC ERASE)</p> <ul style="list-style-type: none"> <li>Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> </ul>	<p>Voltage: TP1/TC-40P(B-5) Current: TP4/TC-40P(B-6) E401/TC-40P(C-5)</p> <p>Specification same phase.</p>	<p>S1-1: ON (preset)</p> <ul style="list-style-type: none"> <li>For phase advance, set S1-2 to ON.</li> <li>For phase delay, set S1-1 to OFF, then set S1-2 to ON.</li> </ul>

<p>Step 4 (FULL ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> </ul>	<p>VTVM: TP7/TC-40P(C-4) E1/TC-40P(B-6)</p> <p>140 ± 10 mV</p> <p>Oscilloscope: TP7/TC-40P(C-5) E1/TC-40P(B-6)</p> <p>No clipping</p>  <p>No distortion</p>  	<p>RV5/TC-40P(D-5)</p>
	<p>No waveform distortion should appear.</p>	
<p>Step 5 (CH-1 ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the AUDIO CH-1 INSERT mode.</li> </ul>	<p>VTVM: TP6/TC-40P(B-6) E401/TC-40P(C-5)</p> <p>170 mV</p> <p>Oscilloscope: TP3/TC-40P(C-5) E401/TC-40P(C-5)</p> <p>No waveform distortion should appear.</p>	<p>RV1/TC-40P(C-2)</p>

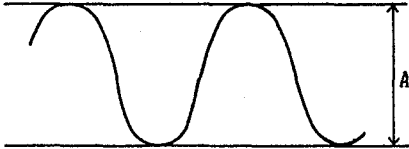


<p>Step 6 (CH-2 ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the AUDIO CH-2 INSERT mode.</li> </ul>	<p>VTVM: TP5/TC-40P(A-6) E401/TC-40P(C-5)</p> <p>170 mV</p> <p>Oscilloscope: TP2/TC-40P(A-6) E401/TC-40P(C-5)</p> <p>No waveform distortion should appear.</p>	<p>RV2/TC-40P(C-2)</p>
<p>Step 7</p> <ul style="list-style-type: none"> <li>• Put the unit into the AUDIO CH-1/CH-2 INSERT mode.</li> </ul>	<p>VTVM: TP6/TC-40P(B-6) TP5/TC-40P(A-6)</p> <p>Adjust so that the voltage (current) at TP5 is the same that at TP6.</p>	<p>RV6/TC-40P(C-2)</p>
<p>Step 8 (TC ERASE CURRENT)</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> </ul>	<p>VTVM: TP4/TC-40P(B-6) E401/TC-40P(C-5)</p> <p><math>160 \pm 10</math> mV</p> <p>Oscilloscope: TP1/TC-40P(B-5) E401/TC-40P(C-5)</p> <p>No waveform distortion should appear.</p>	<p>RV3/TC-40P(A-1)</p>

# 11-17. BIAS OSCILLATION FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>• No signal input.</li> </ul>	TP302/AU-76P(A-4) E302/AU-76P(A-4)  134 ± 0.5kHz	⊗RV301/AU-76P(B-4)

# 11-18. BIAS OSCILLATION LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> </ul>	TP302/AU-76P(A-4)  A = 16.0 ± 0.7 Vp-p	⊗RV302/AU-76P(A-4)

※ After adjustment is completed, make Section 11-17 Bias Oscillation Frequency Adjustment again.

# 11-19. HEAD TUNING ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> </ul>	CH-1: TP105, TP106(GND)/AU-76P(D-3) CH-2: TP205, TP206(GND)/AU-76P(E-3)  Maximize the level.	CH-1: ⊗T501/AU-76P(B-2) CH-2: ⊗T601/AU-76P(A-2)

# 11-20. BIAS TRAP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>• No signal input</li> </ul>	CH-1: TP104/AU-76P(G-6), E103/AU-76P(G-6) CH-2: TP204/AU-76P(G-6), E203/AU-76P(G-7)  Minimize the level. (Should be +14.0 dBs or less.)	CH-1: ⊗LV103/AU-76P(E-3) CH-2: ⊗LV203/AU-76P(F-3)

## 11-21. CONF1 BIAS TRAP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>• No signal input</li> </ul>	CH-1: TP108/AU-76P(E-8), E101/AU-76P(D-7) CH-2: TP208/AU-76P(F-5), E201/AU-76P(F-5)  Minimize the level. (Should be -10.0 dBs or less.)	CH-1: ⓧLV102/AU-76P(D-7) CH-2: ⓧLV202/AU-76P(F-7)

## 11-22. BIAS TRAP ADJUSTMENT (INSERT MODE)

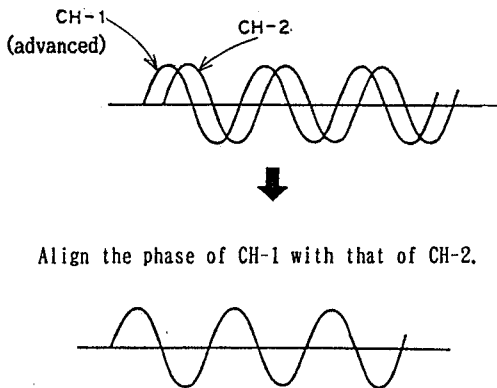
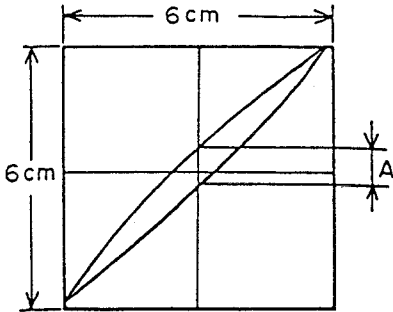
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank cassette, then press the AUDIO CH-1 INSERT, PLAY, and EDIT buttons. (CH-1 AUDIO INSERT MODE)</li> <li>• Set the AUDIO CH-2 INSERT button to OFF.</li> <li>• No signal input.</li> </ul>	TP207/AU-76P(F-2) E204/AU-76P(F-1)  Minimize the level. (Should be -3.0 dBs or less.)	ⓧLV204/AU-76P(F-3)
<ul style="list-style-type: none"> <li>• Press the AUDIO CH-2 INSERT, PLAY, EDIT buttons. (CH-2 AUDIO INSERT MODE)</li> <li>• Set the AUDIO CH-1 INSERT button to OFF.</li> <li>• No signal input.</li> </ul>	TP107/AU-76P(E-2) E104/AU-76P(F-1)  Minimize the level. (Should be -3.0 dBs or less.)	ⓧLV104/AU-76P(E-3)



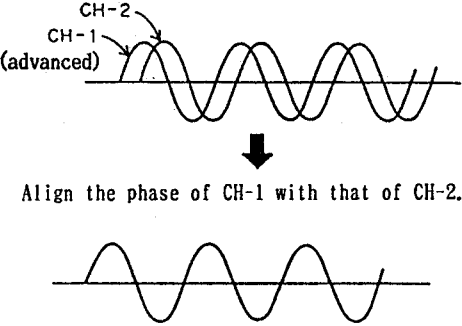
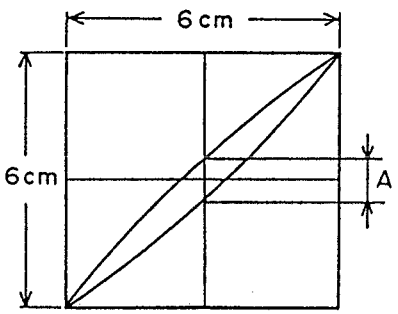
# 11-23. RECORDING BIAS CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20G blank cassette and put the unit into the REC mode.</li> <li>• No extension board should be used.</li> </ul>	TP105, TP106(GND)/AU-76P(D-3) TP205, TP206(GND)/AU-76P(E-3)  $9 \pm 0.1 \text{ mVrms}$	CH-1: ●RV502/AU-76P(C-1) CH-2: ●RV602/AU-76P(B-1)
<ul style="list-style-type: none"> <li>• S101-Bit1/SV-82: ON</li> <li>• Insert the BCT-20M blank cassette and put the unit into the REC mode.</li> <li>• No extension board should be used.</li> </ul>	TP105, TP106(GND)/AU-76P(D-3) TP205, TP206(GND)/AU-76P(E-3)  CH-1 $14 \pm 0.1 \text{ mVrms}$ CH-2 $16 \pm 0.1 \text{ mVrms}$	CH-1: ●RV501/AU-76P(C-1) CH-2: ●RV601/AU-76P(B-1)

# 11-24. OXIDE TAPE OVERALL PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 15kHz signal(+4dBs) to the AUDIO IN CH-1/2 connector.</li> <li>• Insert the BCT-20G blank cassette and put the unit into the REC mode.</li> <li>• CONF1 sw: ON</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>Adjust the advanced channel so that the both phases are aligned.</p>  <p>Align the phase of CH-1 with that of CH-2.</p>	<p>CH-1: ●RV103/AU-75P(G-2) CH-2: ●RV203/AU-75P(E-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back the recorded tape in Step 1.</li> <li>• Display the lissajous's waveform.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm}</math> (Within <math>\pm 5^\circ</math>)</p> <p>Repeat Steps 1 and 2 until Step 2 is satisfied.</p>	

# 11-25. METAL TAPE OVERALL PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a 15kHz signal(+4dBs) to the AUDIO IN CH-1/2 connector.</li> <li>Insert the BCT-20M and put the unit into the REC mode.</li> <li>CONF1 sw: ON</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <p>Adjust the advanced channel so that the both phases are aligned.</p> <p>(advanced)</p> <p>CH-2</p> <p>CH-1 (advanced)</p>  <p>Align the phase of CH-1 with that of CH-2.</p>	<p>CH-1: RV106/AU-75P(C-2)</p> <p>CH-2: RV206/AU-75P(A-2)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>Play back the recorded tape in Step 1.</li> <li>Display the lissajous's waveform.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p>  <p><math>A \leq 0.5 \text{ cm}</math> (Within <math>\pm 5^\circ</math>)</p> <p>Repeat Steps 1 and 2 until Step 2 is satisfied.</p>	

# 11-26. OXIDE TAPE OVERALL FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• Check that the subcontrol panel DOLBY NR switch is set to OFF.</li><li>• Connect an oscillator to the AUDIO IN CH-1/2 connector.</li><li>• Insert the BCT-20G cassette and put the unit into the REC mode.</li><li>• Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li><li>• Play back the recorded tape.</li><li>• No extension board should be used for AU-76P board.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>40Hz</td><td><math>0 \pm \frac{1}{2} \frac{2}{3}</math> dB</td></tr><tr><td>1kHz</td><td>0 (Ref.)</td></tr><tr><td>7kHz</td><td><math>0 \pm 0.5</math> dB</td></tr><tr><td>10kHz</td><td><math>0 \pm 0.5</math> dB</td></tr><tr><td>15kHz</td><td><math>0 \pm 0.7</math> dB</td></tr></table> <p>When the specification is not satisfied, put the unit into the REC mode again and adjust using each variable resistor.</p>	Freq.	Level	40Hz	$0 \pm \frac{1}{2} \frac{2}{3}$ dB	1kHz	0 (Ref.)	7kHz	$0 \pm 0.5$ dB	10kHz	$0 \pm 0.5$ dB	15kHz	$0 \pm 0.7$ dB	<p>CH-1: ⌚RV102/AU-75P(G-1) ⌚LV102/AU-75P(G-2)</p> <p>CH-2: ⌚RV202/AU-75P(F-1) ⌚LV202/AU-75P(E-2)</p> <p>• When only 15kHz does not satisfy level.</p> <p>CH-1: ⌚RV502/AU-76P(C-1)</p> <p>CH-2: ⌚RV602/AU-76P(B-1)</p>
Freq.	Level													
40Hz	$0 \pm \frac{1}{2} \frac{2}{3}$ dB													
1kHz	0 (Ref.)													
7kHz	$0 \pm 0.5$ dB													
10kHz	$0 \pm 0.5$ dB													
15kHz	$0 \pm 0.7$ dB													

## • Frequency response adjustment

When the above frequency does not satisfy the specification, adjust using each variable resistor in the REC CONF1 mode.

# 11-27. METAL TAPE OVERALL FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments												
<ul style="list-style-type: none"><li>• Set system setup menu Item 901 to "1".</li><li>• Check that the subcontrol panel DOLBY NR switch is set to OFF.</li><li>• Connect an oscillator to the AUDIO IN CH-1/2 connector.</li><li>• Insert the BCT-20M cassette and put the unit into the REC mode.</li><li>• Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li><li>• Play back the recorded tape.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>40Hz</td><td>0 ± 1.5dB</td></tr><tr><td>1kHz</td><td>0 (Ref.)</td></tr><tr><td>7kHz</td><td>0 ± 0.5dB</td></tr><tr><td>10kHz</td><td>0 ± 0.5dB</td></tr><tr><td>15kHz</td><td>0 ± 0.5dB</td></tr></table>	Freq.	Level	40Hz	0 ± 1.5dB	1kHz	0 (Ref.)	7kHz	0 ± 0.5dB	10kHz	0 ± 0.5dB	15kHz	0 ± 0.5dB	<p>CH-1:</p> <ul style="list-style-type: none"><li>●RV105/AU-75P(D-1)</li><li>●LV103/AU-75P(D-2)</li></ul> <p>CH-2:</p> <ul style="list-style-type: none"><li>●RV205/AU-75P(B-1)</li><li>●LV203/AU-75P(B-2)</li></ul> <p>• When 15kHz does not satisfy the specification.</p> <p>CH-1:</p> <ul style="list-style-type: none"><li>●RV501/AU-76P(C-1)</li></ul> <p>CH-2:</p> <ul style="list-style-type: none"><li>●RV601/AU-76P(B-1)</li></ul>
Freq.	Level													
40Hz	0 ± 1.5dB													
1kHz	0 (Ref.)													
7kHz	0 ± 0.5dB													
10kHz	0 ± 0.5dB													
15kHz	0 ± 0.5dB													
<ul style="list-style-type: none"><li>• After adjustment is completed, set system setup menu Item 901 to "0".</li></ul>	<p>When the specification is not satisfied, put the unit into the REC mode again and adjust using each variable resistor.</p>													

## • Frequency response adjustment

When the above frequency does not satisfy the specification, adjust using each variable resistor in the REC CONF mode.

# 11-28. OXIDE TAPE REC/PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a 1kHz signal(+4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20G and put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>-10 dBs</p> <p>Memorize the difference level from the specified value.</p>	
<p>Step 2</p> <ul style="list-style-type: none"> <li>Put the unit into the REC mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>Correct the value memorized in Step 1.</p> <p>When the level is higher than the specified value in Step 1, lower the level proportionally. When it is lower than the specified value, raise the level proportionally.</p>	<p>CH-1: RV101/AU-75P(H-1) CH-2: RV201/AU-75P(F-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>Put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>-10 ± 0.2 dBs</p> <p>If the specification is not satisfied, repeat Step 1.</p>	

# 11-29. METAL TAPE REC/PB LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a 1kHz signal(+4ds) to the AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20M and put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>-10 dBs</p> <p>Memorize the difference level from the specified value.</p>	
<p>Step 2</p> <ul style="list-style-type: none"> <li>Put the unit into the REC mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>Correct the value memorized in Step 1.</p> <p>When the level is higher than the specified value in Step 1, lower the level proportionally. When it is lower than the specified value, raise the level proportionally.</p>	<p>CH-1: RV104/AU-75P(E-1) CH-2: RV204/AU-75P(C-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>Put the unit into the self-REC/PB mode.</li> </ul>	<p>CH-1: TP103/AU-75P(H-1), E102/AU-75P(D-1) CH-2: TP203/AU-75P(G-1), E202/AU-75P(B-1)</p> <p>-10 ± 0.2 dBs</p> <p>If the specification is not satisfied, repeat Step 1.</p>	

# 11-30. CONF1 HEAD FREQUENCY RESPONSE ADJUSTMENT (DOLBY OFF)

## 11-30-1. Oxide Conf1 Head Frequency Response Adjustment (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments																		
<ul style="list-style-type: none"> <li>Set S301 on the AU-76P board to ON.</li> <li>Connect an oscillator to the AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20G and put the unit into the REC mode.</li> <li>Set the oscillator frequency level to 40Hz, 1kHz, 7kHz, 10kHz and 15kHz at -16dBs and record each frequency for approx. 10 seconds.</li> <li>Play back the recorded tape.</li> </ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table> <tr> <th>Freq.</th><th>Level (Metal tape)</th><th>Level (Oxide tape)</th></tr> <tr> <td>40Hz</td><td><math>0 \pm 2.7\text{dB}</math></td><td><math>0 \pm 2.7\text{dB}</math></td></tr> <tr> <td>1kHz</td><td>0 dB (Ref.)</td><td>0 dB (Ref.)</td></tr> <tr> <td>7kHz</td><td><math>0 \pm 1\text{dB}</math></td><td><math>0 \pm 1\text{dB}</math></td></tr> <tr> <td>10kHz</td><td><math>0 \pm 1\text{dB}</math></td><td><math>0 \pm 1\text{dB}</math></td></tr> <tr> <td>15kHz</td><td><math>0 \pm 1\text{dB}</math></td><td><math>0 \pm 1\text{dB}</math></td></tr> </table>	Freq.	Level (Metal tape)	Level (Oxide tape)	40Hz	$0 \pm 2.7\text{dB}$	$0 \pm 2.7\text{dB}$	1kHz	0 dB (Ref.)	0 dB (Ref.)	7kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$	10kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$	15kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$	<ul style="list-style-type: none"> <li>3kHz, 7kHz portion CH-1: RV102/AU-76P(E-8) CH-2: RV202/AU-76P(F-7)</li> <li>10kHz, 15kHz portion CH-1: RV101/AU-76P(D-8) CH-2: RV201/AU-76P(F-8)</li> <li>High-frequency fine tuning CH-1: S101/AU-76P(D-8) CH-2: S201/AU-76P(F-8)</li> </ul>
Freq.	Level (Metal tape)	Level (Oxide tape)																		
40Hz	$0 \pm 2.7\text{dB}$	$0 \pm 2.7\text{dB}$																		
1kHz	0 dB (Ref.)	0 dB (Ref.)																		
7kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$																		
10kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$																		
15kHz	$0 \pm 1\text{dB}$	$0 \pm 1\text{dB}$																		

## 11-30-2. Metal Conf1 Head Frequency Response Adjustment (DOLBY OFF)

machine conditions for adjustment	specifications	adjustments								
<ul style="list-style-type: none"><li>• System setup menu ITEM 901: 1</li><li>• DOLBY NR sw: OFF</li><li>• Set S301 on the AU-76P to OFF.</li><li>• Connect an oscillator to the AUDIO IN CH-1/CH-2 connector.</li><li>• Insert the BCT-20M and put the unit into the REC mode.</li><li>• Set the oscillator frequency to 1kHz, 10kHz and 15kHz, and record each frequency for approx. 10 seconds.</li><li>• Play back the recorded tape.</li></ul>	<p>AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>1kHz</td><td>Ref.</td></tr><tr><td>10kHz</td><td>Ref. ± 0.5dB</td></tr><tr><td>15kHz</td><td>Ref. ± 0.5dB</td></tr></table>	Freq.	Level	1kHz	Ref.	10kHz	Ref. ± 0.5dB	15kHz	Ref. ± 0.5dB	<p>CH-1:</p> <p>●RV113/AU-76P(D-7)</p> <p>CH-2:</p> <p>●RV213/AU-76P(E-7)</p>
Freq.	Level									
1kHz	Ref.									
10kHz	Ref. ± 0.5dB									
15kHz	Ref. ± 0.5dB									
<ul style="list-style-type: none"><li>• After adjustment is completed, set system setup menu ITEM 901 to "0".</li></ul>										



# 11-31. CONF I LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set S301 on the AU-76P board to ON.</li> <li>• Supply a 1kHz signal(+4dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>• Insert the BCT-20M and put the unit into the REC mode.</li> <li>• Play back the recorded tape.</li> <li>• After adjustment is completed, set S301 on the AU-76P board to OFF.</li> </ul>	<b>Step 1</b> CH-1: TP102/AU-76P(E-8), E101/AU-76P(D-7) CH-2: TP202/AU-76P(F-5), E201/AU-76P(F-5) -10 ± 0.2 dBs (for checking) -10 ± 0.1 dBs (for adjustment)	CH-1: ⌚RV103/AU-76P(E-8) CH-2: ⌚RV203/AU-76P(F-7)
	<b>Step 2</b> CH-1: TP103/AU-76P(D-1), E102/AU-76P(D-1) CH-2: TP203/AU-76P(D-1), E202/AU-76P(C-1) -10 ± 0.2 dBs (for checking) -10 ± 0.1 dBs (for adjustment)	CH-1: ⌚RV104/AU-76P(B-8) CH-2: ⌚RV204/AU-76P(B-8)

# 11-32. AUDIO INSERT MODE CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set RV404, RV405, RV504, and RV505 to the 4:00 position.</li> </ul>		
<p>Step 1 METAL</p> <p>CH-1 insert crosstalk (CH-2 insert crosstalk)</p> <ul style="list-style-type: none"> <li>Connect the 1kHz and 9kHz signals (+4dBs) to AUDIO IN CH-1/CH-2 connector.</li> <li>Insert the BCT-20M and put the set into the CH-1 AUDIO INSERT mode.</li> <li>Set the CH-2 INSERT button to OFF.</li> <li>Insert the BCT-20M and put the set into the CH-2 AUDIO INSERT mode.</li> <li>Set the CH-1 INSERT button to OFF.</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>Minimize the level.</p>	<ul style="list-style-type: none"> <li>1kHz <ul style="list-style-type: none"> <li>RV503/AU-75P(B-5)</li> <li>(RV403/AU-75P(D-4))</li> </ul> </li> <li>9kHz <ul style="list-style-type: none"> <li>RV504/AU-75P(C-5)</li> <li>(RV404/AU-75P(C-4))</li> </ul> </li> </ul>
<p>i )</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 16kHz</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>-40dBs or less</p>	<ul style="list-style-type: none"> <li>RV505/AU-75P(B-6)</li> <li>LV501/AU-75P(A-7)</li> <li>(RV405/AU-75P(C-6))</li> <li>LV401/AU-75P(C-6)</li> </ul>
<p>ii )</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 10kHz/12.5kHz</li> </ul>	<p>AUDIO OUT CH-2 connector (Terminated in 600 ohms.) AUDIO OUT CH-1 connector (Terminated in 600 ohms.)</p> <p>10kHz = -40dBs or less 12.5kHz = -26dBs or less</p>	<ul style="list-style-type: none"> <li>RV503/AU-75P(B-5)</li> <li>RV504/AU-75P(C-5)</li> <li>(RV403/AU-75P(D-4))</li> <li>RV404/AU-75P(C-4)</li> </ul>
<p>Step 2 OXIDE</p> <ul style="list-style-type: none"> <li>Oscillator's frequency: 17kHz</li> <li>Using a short clip, short between TP402 on the TC-40P board and GND.</li> </ul>	<p>i )</p> <p>+1dBs or less = OK</p> <p>ii ) +1dBs to +5dBs Set 0dBs at RV505/AU-75P and LV501/AU-75P (RV405/AU-75P, LV401/AU-75P) and readjust from Step 2 ii ) and later.</p> <p>iii ) +5dBs and higher Set -1dBs at RV505/AU-75P and LV501/AU-75P (RV405/AU-75P and LV401/AU-75P) and readjust from Step 1 ii ) and later.</p>	
<ul style="list-style-type: none"> <li>Check (METAL tape)</li> </ul>	<p>7kHz, -18dBs or less 10kHz, -18dBs or less 12.5kHz, -21dBs or less</p>	

### 11-33. OVERALL CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a balanced 1kHz signal (+10dBs) to the AUDIO IN CH-1 connector.</li> <li>• Supply no signal to the AUDIO IN CH-2 connector.</li> <li>• AUDIO CH-2 INPUT LEVEL sw: HIGH</li> <li>• 600Ω sw: ON</li> <li>• CONF1 sw: ON</li> <li>• Insert the BCT-20M and put the unit into the REC mode.</li> <li>• After adjustment is completed, set the AUDIO CH-2 INPUT LEVEL switch to LOW, 600-ohm switch to OFF, and CONF1 switch to OFF.</li> </ul>	<p>Connect a spectrum analyzer to the AUDIO OUT CH-2 connector.</p> <p>Minimize the 1kHz level.</p> <p>The 1kHz PB level difference between the AUDIO OUT CH-1 and CH-2 should be -65dB or less.</p>	<p>●RV210/AU-75P(B-8)</p> <p>●RV211/AU-75P(on the IC210(A-8))</p> <p>Note: Adjusted in REC mode. Mesured in REC/PB mode.</p>
<ul style="list-style-type: none"> <li>• Supply a balanced 1kHz signal (+10dBs) to the AUDIO IN CH-2 connector.</li> <li>• Supply no signal to the AUDIO IN CH-1 connector.</li> <li>• AUDIO CH-1 INPUT LEVEL sw: HIGH</li> <li>• 600Ω sw: ON</li> <li>• CONF1 sw: ON</li> <li>• Insert the BCT-20M and put the unit into the REC mode.</li> <li>• After adjustment is completed, set the AUDIO CH-1 INPUT LEVEL switch to LOW, 600-ohm switch to OFF, and CONF1 switch to OFF.</li> </ul>	<p>Connect a spectrum analyzer to the AUDIO OUT CH-1 connector.</p> <p>Minimize the 1kHz level.</p> <p>The 1kHz PB level difference between the AUDIO OUT CH-2 and CH-1 should be -65dB or less.</p>	<p>●RV110/AU-75P(B-8)</p> <p>Note: Adjusted in REC mode. Mesured in REC/PB mode.</p>

### 11-34. TIME CODE OVERALL CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-1/CH-2 connector.</li> <li>• S2/SY-64P board (LTC sw): EXT</li> <li>• Supply a 1.2kHz signal to the TIME CODE IN connector.</li> <li>• Insert the BCT-20M and put the unit into the REC mode.</li> <li>• After adjustment is completed, set S2 on the SY-64P board to the former position.</li> </ul>	<p>Connect a spectrum analyzer to the AUDIO OUT CH-1/CH-2 connector.</p> <p>Minimize the 1.2kHz level.</p> <p>The 1.2kHz level should be -61dBs or less.</p>	<p>CH-1: ●RV108/AU-75P(C-8)</p> <p>CH-2: ●RV208/AU-75P(B-8)</p>

# 11-35. TIME CODE INSERT CROSSTALK ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20G on which only a CTL signal is recorded.</li> <li>• Supply no signal to the AUDIO IN CH-1/CH-2 connector.</li> <li>• AUDIO CH-1, CH-2 INPUT LEVEL sw: HIGH</li> <li>• 600Ω sw: ON</li> <li>• MODE: TC INSERT</li> <li>• After adjustment is completed, set the INPUT LEVEL switch to LOW and the 600-ohm switch to OFF.</li> </ul>	AUDIO OUT CH-1 connector (Terminated in 600 ohms.) AUDIO OUT CH-2 connector (Terminated in 600 ohms.)  Minimize the level.  (−16 dBm or less)	CH-1: ⚙RV401/AU-75P(B-10) CH-2: ⚙RV501/AU-75P(A-10)  CH-1: ⚙RV402/AU-75P(C-9) CH-2: ⚙RV502/AU-75P(B-9) Repeat the above adjustment.

※ In Section 11-36 AFM Input Level Adjustment through Section 11-49 AFM PB Level Adjustment, set the switches as follows:

- Level control panel  
AUDIO MONITOR switch : AFM
- Subcontrol panel  
AFM INPUT switch : CH-3/-4

【Connection】

Fig. 1

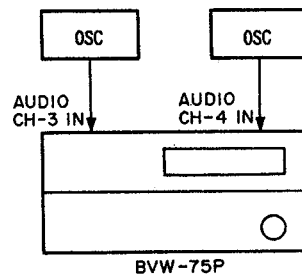


Fig. 2

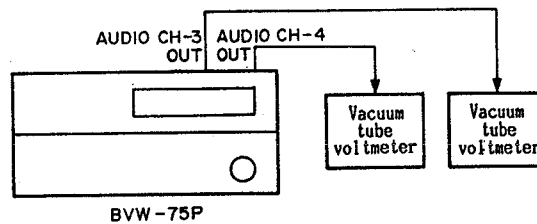


Fig. 3

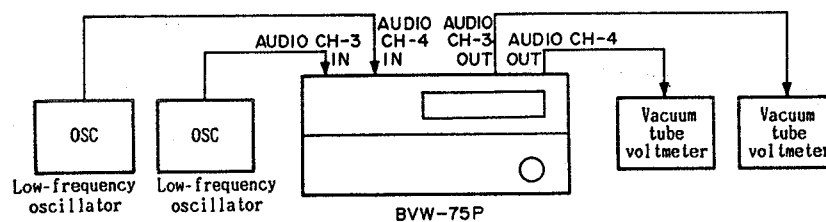


Fig. 4

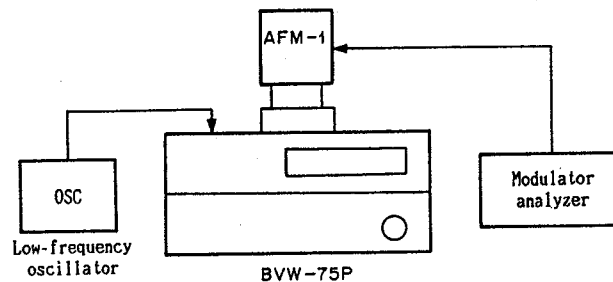


Fig. 5

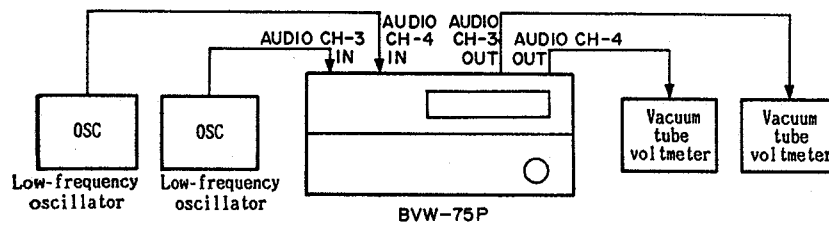
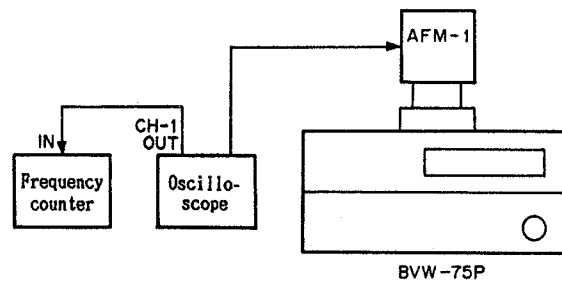


Fig. 6



### 11-36. AFM INPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• MODE: EE</li> <li>• CONNECTION: Fig. 1</li> </ul>	TP301/AFM-1(B-5) TP401/AFM-1(E-4)  $-10 \pm 0.1 \text{ dBs}$	CH-3: ⌚RV301/BF-28(A-3) (Panel display: CH-3 REC VR)  CH-4: ⌚RV401/BF-28(A-2) (Panel display: CH-4 REC VR)

### 11-37. AFM EE OUT LEVEL ADJUSTMENT (Up to S/N 14340)

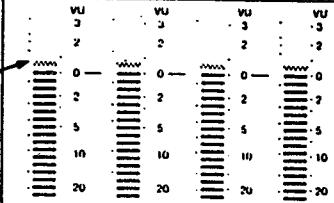
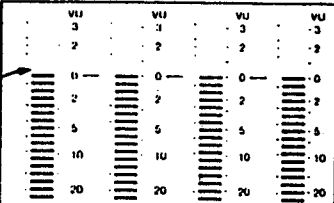
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• MODE: EE</li> <li>• CONNECTION: Fig. 1</li> </ul>	TP304/AFM-1(B-6) TP404/AFM-1(E-6)  $-10 \pm 0.1 \text{ dBs}$	CH-3: ⌚RV304/AFM-1(B-6) CH-4: ⌚RV404/AFM-1(E-5)

### 11-38. AFM AUDIO OUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• MODE: EE</li> <li>• CONNECTION: Fig. 3</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  $4 \pm 0.1 \text{ dBm}$	CH-3: ⌚RV301/CP-161A(C-1) ⌚RV351/CP-111(D-2) CH-4: ⌚RV401/CP-161A(D-1) ⌚RV451/CP-111(D-1)



# 11-39. LEVEL METER 0VU ADJUSTMENT

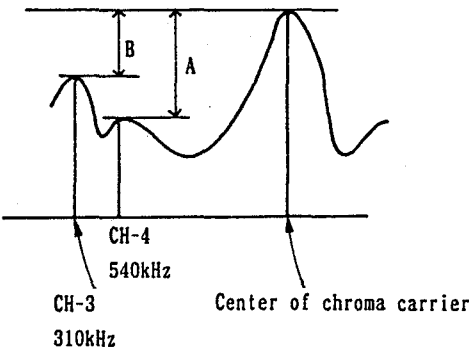
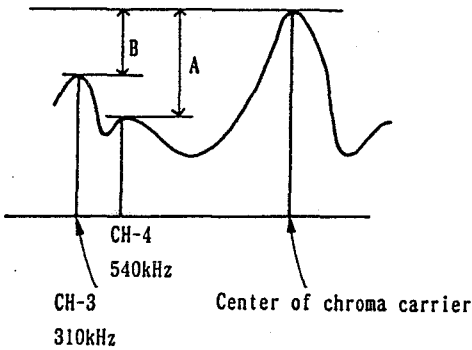
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 1kHz signal(+4.2dBs) to the AUDIO IN CH-1/CH-2 connector.</li> <li>S1/DP-73(SCALE VU/dB select SW): VU (Located on the upper left.)</li> <li>MODE: EE</li> <li>AFM INPUT sw: CH-1/2</li> </ul>	 <p>The segment which is upper by one step than the display indicator's 0VU should blink.</p>	CH-1: ●RV501/BF-28(I-3) CH-2: ●RV601/BF-28(I-2) CH-3: ●RV701/BF-28(I-2) CH-4: ●RV801/BF-28(I-1)
<ul style="list-style-type: none"> <li>Set the input level to 4dBs.</li> <li>After adjustment is completed, set S1 on the DP-73 board to the former position.</li> </ul>	 <p>Up to the display indicator's 0VU lights, and the segment which is upper by one step should go off.</p>	CH-1: ●RV501/BF-28(I-3) CH-2: ●RV601/BF-28(I-2) CH-3: ●RV701/BF-28(I-2) CH-4: ●RV801/BF-28(I-1)

# 11-40. LOG AMP LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>S1/DP-73(SCALE VU/dB select SW): dB</li> <li>AFM INPUT sw: CH-1/2</li> </ul> Step 1 <ul style="list-style-type: none"> <li>Supply a 1kHz signal(-17±0.1dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the -30dB display indicator lights.	●RV903/BF-28(H-4) (MIDDLE LEVEL)
Step 2 <ul style="list-style-type: none"> <li>Supply a 1kHz signal(-27±0.1dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the -40dB display indicator lights.	●RV901/BF-28(H-5) (LOW LEVEL)
Step 3 <ul style="list-style-type: none"> <li>Supply a 1kHz signal(+13±0.1dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Adjust so that the 0dB display indicator lights.	●RV902/BF-28(H-5) (HIGH LEVEL)
Step 4 <ul style="list-style-type: none"> <li>Supply a 1kHz signal(-27±1dBs) to the AUDIO IN CH-1/CH-2 connector.</li> </ul>	Check that the -40±1dB display indicator lights.  Repeat the above Steps until the specification is satisfied.	



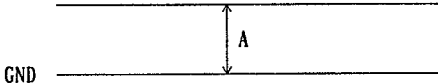
# 11-41. AFM RECORDING CURRENT ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p><b>Step 1</b></p> <ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Supply a black burst signal to the DUB/COMPONENT 1 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Insert the BCT-20M.</li> <li>• S1/AFM-1: OFF(right side)</li> <li>• Remove short socket SP101 on the RP-29P(C) board and short between TP103 and TP104 using a shoring clip.</li> <li>• Connect a current probe to the shorting clip and the output to the spectrum analyzer.</li> <li>• MODE: REC</li> </ul>	<p>TP103-TP104/RP-29P(C)(C-3)</p>  <p>CH-4 540kHz</p> <p>CH-3 310kHz</p> <p>Center of chroma carrier</p> <p><math>A = -26 \pm 0.2 \text{ dB}</math> <math>B = -23 \pm 0.2 \text{ dB}</math></p>	<p>Set RV603 near the center position.</p> <p>CH-4; ●RV602/AFM-1(C-3) (When no adjustment can be made, adjust using RV603.)</p>
<p><b>Step 2</b></p> <ul style="list-style-type: none"> <li>• After Step 1 is adjusted, insert SP101 on the RP-29P(C) board, remove SP102, and short between TP105 and TP106 using a shorting clip.</li> <li>• Connect a current probe to the shorting clip and the output to the spectrum analyzer.</li> <li>• MODE: REC</li> </ul>	<p>TP105-TP106/RP-29P(C)(C-2)</p>  <p>CH-4 540kHz</p> <p>CH-3 310kHz</p> <p>Center of chroma carrier</p> <p><math>A = -26 \pm \frac{2}{3} \text{ dB}</math> <math>B = -23 \pm 1 \text{ dB}</math></p>	<p>CH-3; ●RV114/RP-29P(C)(D-2)</p>

# 11-42. AFM MODULATION ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1 (Reference modulation)</p> <ul style="list-style-type: none"> <li>• Insert alignment tape CR5-1B PS and play back an AFM 400Hz (25kHz deviation) signal.</li> <li>• Supply a 400Hz signal (+4dBm) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M, put the set into the REC mode, and play back the recorded portion on tape.</li> </ul>	<p>AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)</p> <p>Align the alignment tape level with the level in the PB mode.</p>	<p>CH-3: ●RV501/AFM-1(C-3) CH-4: ●RV502/AFM-1(D-3)</p>
<p>Step 2 (Maximum modulation)</p> <ul style="list-style-type: none"> <li>• Insert alignment tape CR5-1B PS and play back an AFM 400Hz (75kHz deviation) signal.</li> <li>• Supply a 400Hz signal (+24dBm) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M, put the set into the REC mode, and play back the recorded portion on tape.</li> </ul>	<p>AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)</p> <p>Align the alignment tape level with the level in the PB mode.</p>	<p>CH-3: ●RV104/AFM-1(E-3) CH-4: ●RV204/AFM-1(A-4)</p>

### 11-43. AFM DC LEVEL ADJUSTMENT (Up to S/N 14340)

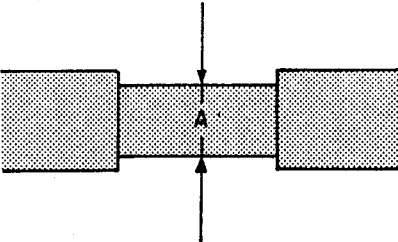
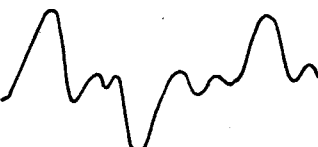
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B PS.</li> </ul>	TP606/VO-18P(F-3)    $A = 0.35 \pm 0.02 \text{ Vdc}$	⌚RV601/VO-18P(F-3)

### 11-44. AFM CARRIER FREQUENCY ADJUSTMENT

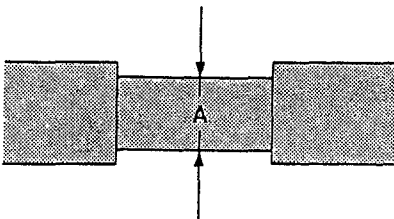
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply no signal to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M and put the unit into the REC mode.</li> <li>• CONNECTION: Fig. 6</li> </ul>	TP101/AFM-1(E-2) TP103/AFM-1(D-1)  $310 \pm 1 \text{ kHz}$	CH-3: ⌚RV101/AFM-1(E-2) ⌚RV103/AFM-1(D-3)
	TP201/AFM-1(B-2) TP203/AFM-1(B-3)  $540 \pm 1 \text{ kHz}$	CH-4: ⌚RV201/AFM-1(A-2) ⌚RV203/AFM-1(A-3)

### 11-45. AFM RF LEVEL ADJUSTMENT

※ Section 11-44 AFM Carrier Frequency Adjustment should be completed.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B PS.</li> </ul>	TP3/AFM-1(CH-3)(D-1) TP4/AFM-1(CH-4)(B-1)    Set the lower level in channel A or B to satisfy the specification. $A = 1.5 \pm 0.05 \text{ Vp-p}$    The waveform should not be clipped.	CH-3: ⌚RV2/AFM-1(D-2)  CH-4: ⌚RV4/AFM-1(B-2)   TRIG: TP701/AFM-1(B-6)

#### 11-46. AFM DOC LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B PS.</li> </ul>	TP5/AFM-1(CH-3)(D-1) TP6/AFM-1(CH-4)(B-2)  <p>Set the lower level in channel A or B to satisfy the specification.</p> $A = 0.3 \pm 0.02 \text{ Vp-p}$	CH-3: ⌚RV5/AFM-1(D-1) CH-4: ⌚RV6/AFM-1(B-2)  TRIG: TP701/AFM-1(B-6)

#### 11-47. SWITCHING NOISE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 400Hz signal(+4dBs) to the AUDIO IN CH-3/CH-4 connector.</li> <li>• Insert the BCT-20M, record it for approx. one minute, and play back the recorded portion on tape.</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  Minimize the distortion factor. (0.5% or less)	CH-3: ⌚RV105/AFM-1(B-4) CH-4: ⌚RV205/AFM-1(B-4)

#### 11-48. AFM PB SNR OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B PS.</li> </ul>	TP303/AFM-1(CH-3)(B-6) TP403/AFM-1(CH-4)(E-5)  $-10 \pm 0.1 \text{ dBs}$	CH-3: ⌚RV102/AFM-1(B-3) CH-4: ⌚RV202/AFM-1(C-3)

# 11-49. AFM PB LEVEL ADJUSTMENT

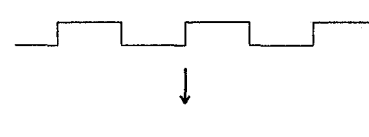
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back an AFM 400Hz signal (25kHz deviation) on alignment tape CR5-1B PS.</li> <li>• CONNECTION: Fig. 2</li> </ul>	AUDIO OUT CH-3 connector (Terminated in 600 ohms.) AUDIO OUT CH-4 connector (Terminated in 600 ohms.)  $4 \pm 0.1 \text{ dBm}$	CH-3: ⒶRV302/BF-28(A-2) (Panel display: CH-3 PB VR)  CH-4: ⒶRV402/BF-28(A-1) (Panel display: CH-4 PB VR)

# 11-50. TIME CODE ADJUSTMENT

## 【Switch Setting】

S2/SY-64P (EXT/INT sw) ..... INT  
 S3/SY-64P (REGEN/PRESET) ..... PRESET  
 CTL/TC/U-BIT SW (on control panel) ..... CTL

## 11-50-1. LTC AMP OUT Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Insert the BCT-20M blank and put the unit into the REC mode.</li> </ul>	CH-1: CN205, 11B/TC-40P } ADD mode CH-2: CN205, 11C/TC-40P }   Minimize the level difference.	ⒶRV202/TC-40P(D-4)

## 11-50-2. LTC Muting Level Adjustment (Up to S/N 14257)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Turn on the power.</li> </ul>	TP206/TC-40P(F-5)  $300 \pm 20 \text{ mVdc}$	ⒶRV201/TC-40P(E-5)

## SECTION 12

### VIDEO SYSTEM ALIGNMENT

Note: Before perform Sec. 12 VIDEO SYSEY ALIGNMENT, perform Sec. 13-14 through 13-23.

#### 【Equipment Required】

- Dual-trace oscilloscope
- Spectrum analyzer
- Network analyzer
- PAL signal generator: Tektronix 1411 or the equivalent
- PAL component signal generator: Tektronix TSG-300 or the equivalent
- Waveform/vector monitor: Tektronix 1751 or the equivalent
- Vectorscope: Tektronix 521A or the equivalent
- Waveform monitor: Tektronix 1480 series or the equivalent
- Sweep generator: SHIBASOKU VS12AX or the equivalent
- Multi connector cable: J-6030-820-A
- Alignment tape CR5-2A PS, CR5-1B PS

CR5-2A PS (8-960-098-44) Contents

TIME min, sec	VIDEO TRACK
0:00	75% Color Bars
3:00	Multi Burst Y: 0.5, 1, 2, 3, 4.1, 4.5 MHz C: 0.2, 0.5, 1, 1.5, 2.0 MHz
6:00	
9:00	Bowtie & 10T
11:00	Pulse & Bar C: No signal
13:00	Quad Phase
15:00	COMPOSITE Monoscope Video Phase, Diehedral

CR5-1B PS (8-960-096-91) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep Marker 1, 2, 4, 6, 8, 10, 12 MHz	No-Signal
2:00	60% H. Sweep (CTDM) Marker 0.5, 1, 2, 3, 4, 5 MHz	
5:00	Pulse & Bar (CTDM)	
8:00	Multi Burst Y:0.5, 1, 2, 4, 5, 5.5 MHz C:0.2, 0.5, 1, 1.5, 2 MHz	
11:00	Pulse & Bar	
14:00		400Hz Sine Wave 25kHz Deviation
16:30	100% Color Bars	75kHz Deviation
17:00	50% Bowtie & 10T	No-Signal
19:00	Line 17A Signal	
22:00	Quad Phase	
24:00	Flat Field	
26:00	100% Color Bars with dropout	
28:00	Composite H. Sweep with VISC	
30:00		

# 【Switch Setting】

## • Function Control Panel

CONF1 switch : OFF  
PB. PB/EE switch : PB/EE  
CTL/TC/U-BIT switch : CTL  
DT SELECT switch : OFF

## • Control Panel

AUDIO MONITOR switch : ST/MIX  
AUDIO MONITOR switch : LNG  
AUDIO LIMITER switch : OFF  
AUDIO MIXING switch : OFF  
TRACKING control switch : FIXED  
REMOTE/LOCAL switch : LOCAL  
INPUT SELECT switch : COMPOSITE

## • Subcontrol Panel

TBC CONTROL switch : LOCAL  
VIDEO switch : PRESET  
CHROMA switch : PRESET  
BLACK LEVEL switch : PRESET  
Y/C DELAY switch : PRESET  
TBC BYPASS switch : ON  
VIDEO INPUT switch : AUTO  
REC INHIBIT switch : OFF  
CAPSTAN LOCK switch : 2FD  
AFM INPUT switch : CH-1/2  
AUDIO MONITOR switch : ST  
DOLBY NR switch : OFF

## • Connector Panel

REF VIDEO selector : AUTO  
REF VIDEO 75 ohm termination : ON  
VIDEO IN 75 ohm termination : ON  
COMPONENT Select switch : COMPONENT 2

## • DEC-46P Board

S1 (CHROMA SUBTRACT) : ON

## • DEC-42P Board

S500 (VITC BLANKING) : SEL

## • MD-46P Board

S1 (MD REFERENCE) : OFF

S2 (REFERENCE POSITION) : 19H

## • DM-56P Board

S402 (Y NON-LINEAR PREEMPHASIS  
BYPASS) : OFF

S403 (Y OXIDE NOISE CANCEL) : OFF

S802 (C NON-LENEAR PREEMPHASIS  
BYPASS) : OFF

S901 (COMPOSITE DT) : OFF

SP101 (Y RF AGC OFF) : OPEN

SP102 (Y RF AGC ON) : SHORT

SP301 (Y SIGNAL ON/OFF) : SHORT

SP402 (Y VIDEO OUT ON/OFF) : SHORT

SP501 (C RF AGC OFF) : OPEN

SP502 (C RF AGC ON) : SHORT

SP701 (C SIGNAL ON/OFF) : SHORT

SP801 (C VIDEO OUT ON/OFF) : SHORT

## • TBC-7D Board

S101 (VISC) : ON

S200 (TEST) : ON

## • TBC-12P Board

S500-1 (DIGITAL COMB FILTER) :OFF

S500-2 (LINE ADDER) :OFF

S500-3 (UNDER FIND) :OFF

S500-4 (VISC MUTE) :OFF

• TBC-9P Board

S3-1 to 8 (BLANKING POSITION) : ON  
 S4-1 to 7 (BLANKING POSITION) : ON  
 S4-8 (TBC SYNC DELAY) : OFF

• EN-48P Board

S1 (B & W MODE) : OFF  
 S2 (ID BLANKING) : OFF

• VO-18P Board

S1 (CHARACTER BACK) : B BACK  
 S2 (Y MUTE) : OFF  
 S3 (NON-COMPOSITE) : OFF  
 S4 (VISC) : ON  
 S5 (VISC) : ON

• SY-61 Board

S1 (CHARACTER) : ON  
 S201 (SYNCHRONIZE) : ON  
 S202 (VTR CONTROL) : INT

• SY-64P Board

S1 (VITC/AUTO/LTC) : LTC  
 S2 (EXT/INT) : INT  
 S3 (REGEN/PRESET) : PRESET  
 S4 (REC RUN/FREE RUN) : FREE RUN  
 S6 (VITC) : ON  
 S7 (ID PRESET) : OFF

【 Ordinary Connections 】

Fig 1 : 12-1-1 through 12-1-19

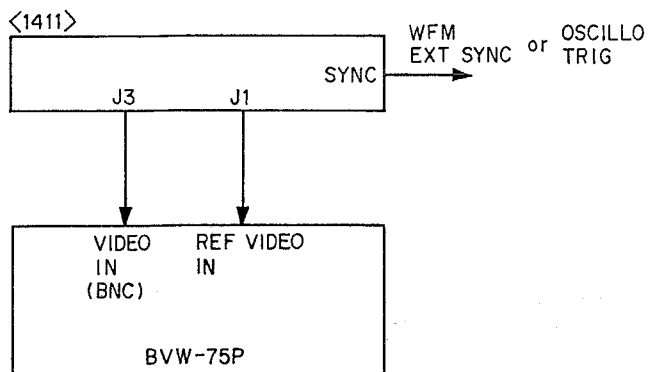
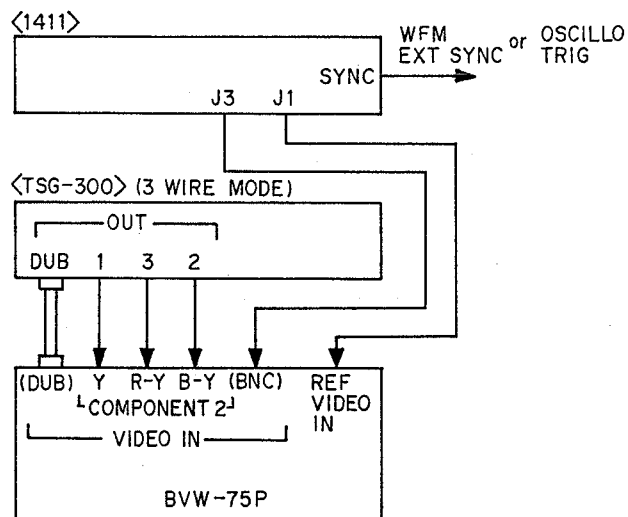


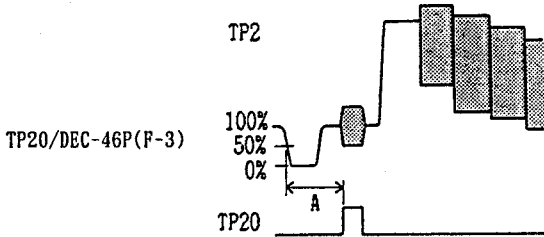
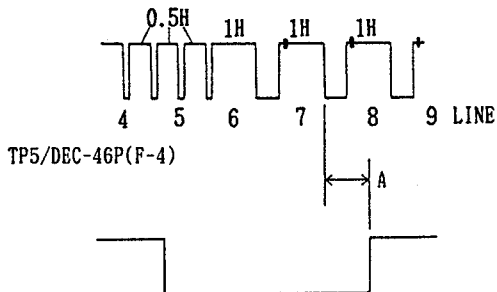
Fig 2 : 12-1-20 through 12-2-12



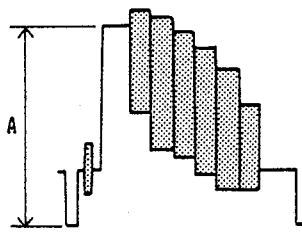


## 12-1. DEC BOARD ADJUSTMENT

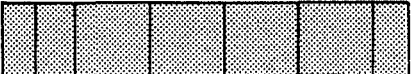

### 12-1-1. AGC Burst Gate Pulse Timing Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP2/DEC-46P(B-4)</p>  <p>TP20/DEC-46P(F-3)</p> <p>100% 50% 0%</p> <p>A</p> <p>TP20</p> <p><math>A = 6.6 \pm 0.2 \mu\text{sec}</math></p>	<p>RV7/DEC-46P(E-4)</p> <p>TRIG: 1411 SYNC HD</p>
	<p>TP2/DEC-46P(B-4)</p>  <p>0.5H 1H 1H 1H</p> <p>4 5 6 7 8 9 LINE</p> <p>TP5/DEC-46P(F-4)</p> <p>A</p> <p><math>A = 35 \pm 5 \mu\text{sec}</math></p>	<p>RV8/DEC-46P(G-5)</p> <p>TRIG: 1411 SYNC (FLD REF)</p>

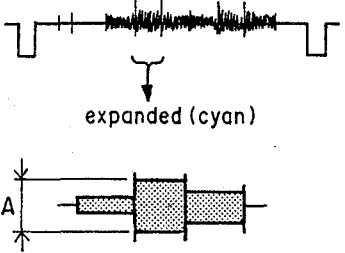
### 12-1-2. AGC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP2/DEC-46P(B-4)</p>  <p>A</p> <p>Measured in the A level.</p> <p><math>A = 0.45 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV6/DEC-46P(F-6)</p> <p>TRIG: 1411 SYNC HD</p>

### 12-1-3. VIDEO Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a V sweep (REDUSED) signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li><li>• VIDEO control/subcontrol panel: MANUAL, fully turn it clockwise.</li></ul>	<p>TP19/DEC-46P(C-1)</p> <div><div><div>0.5</div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>MHz</div></div></div> <div></div> <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5 MHz</td><td>100%(Ref.)</td></tr><tr><td>1.0 MHz</td><td>100 ± 3%</td></tr><tr><td>2.0 MHz</td><td>100 ± 3%</td></tr><tr><td>3.0 MHz</td><td>100 ± 3%</td></tr><tr><td>4.0 MHz</td><td>100 ± 3%</td></tr><tr><td>5.0 MHz</td><td>100 ± 3%</td></tr></tbody></table>	Freq.	Level	0.5 MHz	100%(Ref.)	1.0 MHz	100 ± 3%	2.0 MHz	100 ± 3%	3.0 MHz	100 ± 3%	4.0 MHz	100 ± 3%	5.0 MHz	100 ± 3%	<p>● CV1/DEC-46P(A-3)</p> <p>TRIG: 1411 SYNC (FLD REF)</p>
Freq.	Level															
0.5 MHz	100%(Ref.)															
1.0 MHz	100 ± 3%															
2.0 MHz	100 ± 3%															
3.0 MHz	100 ± 3%															
4.0 MHz	100 ± 3%															
5.0 MHz	100 ± 3%															

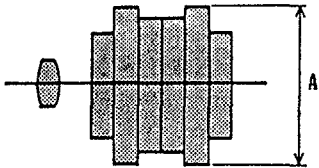
## 12-1-4. Y NON STD TRAP Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• Set the signal generator's Y switch to OFF.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> <li>• VIDEO INPUT sw/subcontrol panel: NON STD</li> <li>• S1/DEC-46P(C-2): OFF</li> <li>• After adjustment is completed, set the VIDEO INPUT switch, S1 on the DEC-46P board and signal generator's Y switch to former position.</li> </ul>	<p>TP17/DEC-46P(G-2)</p>  <p>expanded (cyan)</p> <p>Measured in the A level (Cyan's noise amount)</p> <p><math>A \leq 100 \text{ mVp-p (minimize)}</math></p>	<p>● LV1/DEC-46P(G-2)</p> <p>TRIG: 1411 SYNC HD</p>


# 12-1-5. Y Output Frequency Response Tentative Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"><li>• Supply a V sweep (REDUSED) signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li><li>• S1/DEC-46P(C-2): OFF</li></ul>  		

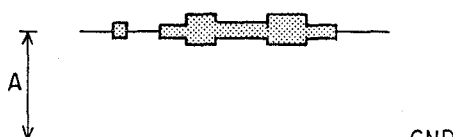
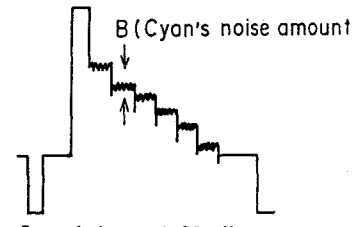
# 12-1-6. Chroma Correlator Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>MODE: EE</li> </ul>	<p>TP11/DEC-46P(B-3) TP15/DEC-46P(B-3) TP18/DEC-46P(B-2)</p>  <p><math>A = 1.0 \pm 0.05 V_{p-p}</math></p>	<p>RV2/DEC-46P(B-3) RV5/DEC-46P(B-2) RV4/DEC-46P(B-2)</p> <p>TRIG: 1411 SYNC HD</p>

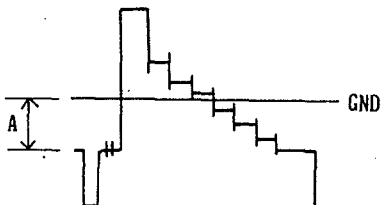
### 12-1-7. Y Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP17/DEC-46P(G-2)</p>  <p><math>A = 1.0 \pm 0.02 \text{ V}_{p-p}</math></p>	<p>RV13/DEC-46P(F-1)</p> <p>TRIG: 1411 SYNC HD</p>

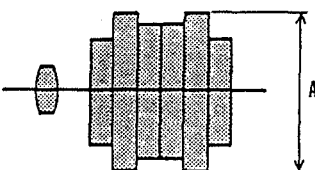
### 12-1-8. Y/C Cancel Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>Step 1</p> <p>TP13/DEC-46P(D-2)</p>  <p><math>A = 3.0 \pm 0.2 \text{ V}_{dc}</math></p>	<p>RV14/DEC-46P(D-3)</p>
	<p>Step 2</p> <p>TP402/DEC-42P(H-3)</p>  <p><math>B = \text{minimum} \leq 20 \text{ mV}_{p-p}</math></p> <p>If the specification is not satisfied, change the TP13 waveform within specification A using RV14 on the DEC-46P board, then retry.</p>	<p>RV11/DEC-46P(D-3)</p> <p>RV15/DEC-46P(A-2)</p>
	<p>Step 3</p> <p>Check that the TP13 waveform satisfies specification A.</p> <p>If the specification is not satisfied, adjust RV14 on the DEC-46P board, then repeat from Step 2.</p>	<p>TRIG: 1411 SYNC HD</p>

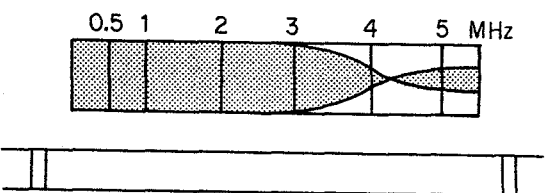
### 12-1-9. Y DC Offset Voltage Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP17/DEC-46P(G-2)</p>  <p><math>A = 230 \pm 5 \text{ mVdc}</math></p>	<p>RV1/DEC-46P(F-6)</p> <p>TRIG: 1411 SYNC HD</p>

### 12-1-10. Chroma Output Level Adjustment

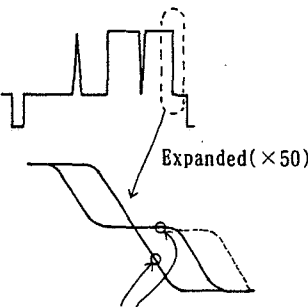
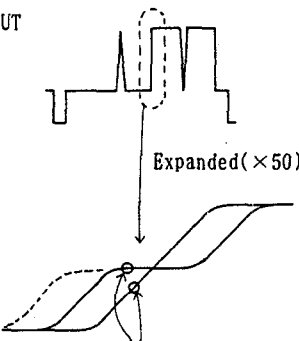
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP14/DEC-46P(H-3)</p>  <p><math>A = 1.05 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV12/DEC-46P(H-3)</p> <p>TRIG: 1411 SYNC HD</p>

# 12-1-11. Y OUTPUT Frequency Response Adjustment

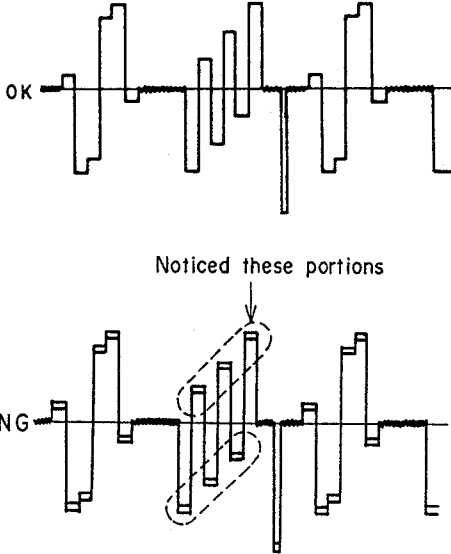
machine conditions for adjustment	specifications	adjustments																							
<ul style="list-style-type: none"> <li>• Supply a V sweep (REDUSED) signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> <li>• S1/DEC-46P(C-2): OFF (Spec. A)</li> <li>• S1/DEC-46P(C-2): ON (Spec. B)</li> </ul>	<p>TP17/DEC-46P(G-2)</p>  <table border="1"> <thead> <tr> <th rowspan="2">Freq.</th><th colspan="2">Level</th></tr> <tr> <th>Spec. A</th><th>Spec. B</th></tr> </thead> <tbody> <tr> <td>0.5MHz</td><td>100%(Ref.)</td><td>100%(Ref.)</td></tr> <tr> <td>1.0MHz</td><td>100 ± 2%</td><td>100 ± 2%</td></tr> <tr> <td>2.0MHz</td><td>100 ± 2%</td><td>98 ± 2%</td></tr> <tr> <td>3.0MHz</td><td>100 ± 5%</td><td>75 ± 1%</td></tr> <tr> <td>4.0MHz</td><td>100 ± 5%</td><td>—</td></tr> <tr> <td>5.0MHz</td><td>100 ± 5%</td><td>—</td></tr> </tbody> </table>	Freq.	Level		Spec. A	Spec. B	0.5MHz	100%(Ref.)	100%(Ref.)	1.0MHz	100 ± 2%	100 ± 2%	2.0MHz	100 ± 2%	98 ± 2%	3.0MHz	100 ± 5%	75 ± 1%	4.0MHz	100 ± 5%	—	5.0MHz	100 ± 5%	—	<ul style="list-style-type: none"> <li>• For Spec. A</li> <li>• CV101/DEC-46P(E-1)</li> </ul> <p>TRIG: 1411 SYNC HD</p>
Freq.	Level																								
	Spec. A	Spec. B																							
0.5MHz	100%(Ref.)	100%(Ref.)																							
1.0MHz	100 ± 2%	100 ± 2%																							
2.0MHz	100 ± 2%	98 ± 2%																							
3.0MHz	100 ± 5%	75 ± 1%																							
4.0MHz	100 ± 5%	—																							
5.0MHz	100 ± 5%	—																							

## 12-1-12. Noise Reduction Pulse Adjustment

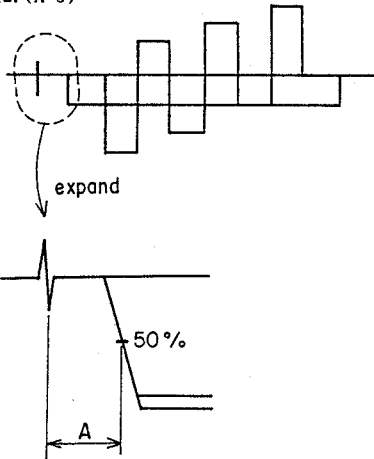
- Before performing this adjustment, perform Sec. 13 TBC Alignment.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal (-1.5dB) the COMPONENT 2 IN connector.</li> </ul>	<p>Step 1 COMPONENT 2 Y OUT</p>  <p>Expanded(<math>\times 50</math>)</p> <p>The luminance in two lines should be the same.</p>	<p>●RV202/DEC-46P(B-6) Short between TP702 the NR-32 board and GND.</p>
	<p>Step 2 COMPONENT 2 Y OUT</p>  <p>Expanded(<math>\times 50</math>)</p> <p>The luminance in two lines should be the same.</p>	<p>●RV201/DEC-46P(B-5) Short between TP702 the NR-32 board and GND.</p>

### 12-1-13. Decode Axis Phase Adjustment

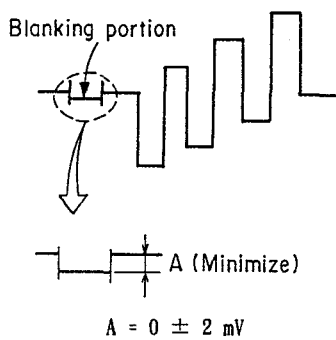
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP403/DEC-42P(H-2)</p>  <p>Minimize the level fluctuation.</p>	<p>RV7/DEC-42P(C-4)</p> <p>TRIG: TP500/DEC-42P(F-4)</p>

### 12-1-14. C Blanking Width Adjustment

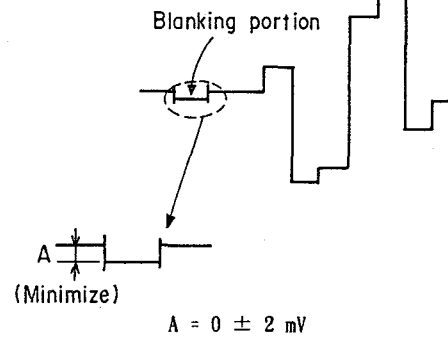
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a half red color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP3/DEC-42P(A-3)</p>  <p><math>A = 1.5 \pm 0.05 \mu\text{sec}</math></p>	<p>RV512/DEC-42P(G-5)</p> <p>TRIG: 1411 SYNC HD</p>



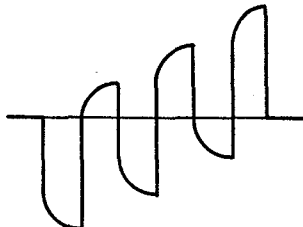
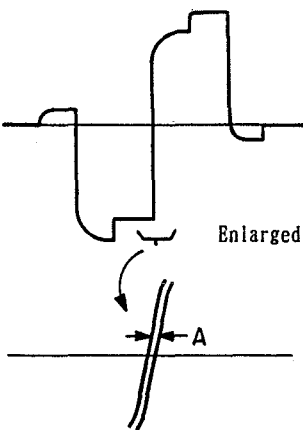
# 12-1-15. B-Y H Blanking DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	TP3/DEC-42P(A-3)  <p>Blanking portion</p> <p>A (Minimize)</p> <p><math>A = 0 \pm 2 \text{ mV}</math></p>	RV3/DEC-42P(A-4)  TRIG: 1411 SYNC HD

# 12-1-16. R-Y H Blanking DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	TP4/DEC-42P(B-3)  <p>Blanking portion</p> <p>A (Minimize)</p> <p><math>A = 0 \pm 2 \text{ mV}</math></p>	RV6/DEC-42P(B-4)  TRIG: 1411 SYNC HD

# 12-1-17. Decoded R-Y/B-Y Timing Error Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% REVERSE Y OFF color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP3/DEC-42P(A-3)</p>  <p>TP4/DEC-42P(B-3)</p>  <p><math>A = 0 \pm 10 \text{ nsec}</math></p>	<p>RV8/DEC-42P(B-4)</p> <p>TRIG: 1411 SYNC HD</p>

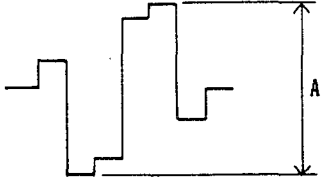
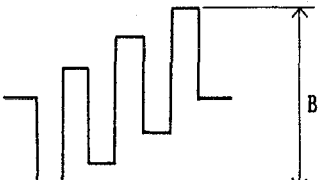
# 12-1-18. CTDM Clock AFC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> <li>• Using a digital voltmeter.</li> </ul>	<p>TP802/DEC-42P(C-5)</p> <p>Measure the DC voltage A volt</p> <p>TP803/DEC-42P(D-4)</p> <p>Measure the DC voltage B volt</p> <p><math>B = (A - 50) \pm 50 \text{ mVdc}</math></p>	<p>LV801/DEC-42P(D-3)</p>

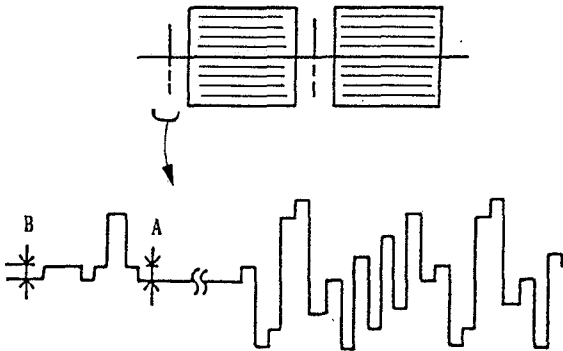
# 12-1-19. CTDM A/D REC DC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> <li>• Using a digital voltmeter</li> </ul>	TP205/DEC-42P(D-2)  $3.000 \pm 0.005 \text{ Vdc}$	RV205/DEC-42P(C-2)

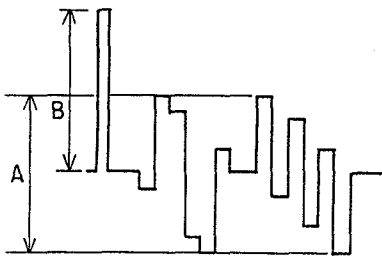
# 12-1-20. CTDM A/D Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP201/DEC-42P(D-2)   $A = 1.80 \pm 0.01 \text{ Vp-p}$	RV203/DEC-42P(D-2)
	TP202/DEC-42P(D-1)   $B = 1.80 \pm 0.01 \text{ Vp-p}$	RV204/DEC-42P(D-1)  TRIG: 1411 SYNC HD

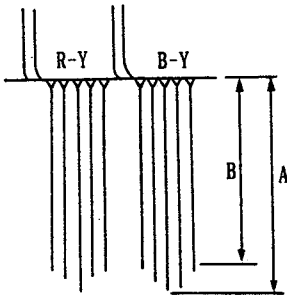
# 12-1-21. CTDM A/D Input DC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>MODE: EE</li> </ul>	TP203/DEC-42P(G-1) Step 1 B-Y DC Adjustment  $A = 0 \pm 5 \text{ mV}$	RV206/DEC-42P(D-2)
	Step 2 R-Y DC Adjustment $B = 0 \pm 5 \text{ mVdc}$	RV207/DEC-42P(D-2)  TRIG: 1411 SYNC (FLD REF)

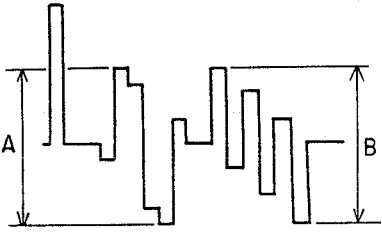
# 12-1-22. COMPONENT 2 Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>INPUT SELECT sw: Y-R, B</li> <li>MODE: EE</li> </ul>	TP19/MD-46P(C-5)  $A = 0.93 \pm 0.01 \text{ Vp-p}$ $B = 0.84 \pm 0.01 \text{ Vp-p}$	<ul style="list-style-type: none"> <li>For A RV412/DEC-42P(H-1)</li> <li>For B RV405/DEC-42P(H-2)</li> </ul> TRIG: 1411 SYNC HD

### 12-1-23. C LINEARITY Adjustment

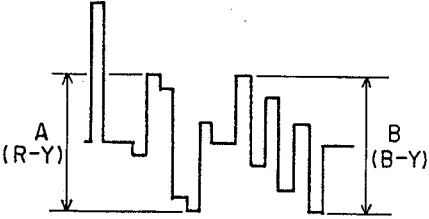
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 5 STEP signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> <li>• WAVEFORM MONITOR: DIFF'D MODE</li> </ul>	<p>TP19/MD-46P(C-5) (WFM)</p>  <p>A (Maximize level) = 100% B (Minimize level) ≥ 97%</p>	<ul style="list-style-type: none"> <li>• For R-Y ⊗RV208/DEC-42P(B-2)</li> <li>• For B-Y ⊗RV209/DEC-42P(B-2)</li> </ul>

### 12-1-24. COMPONENT 1 Input Level Adjustment

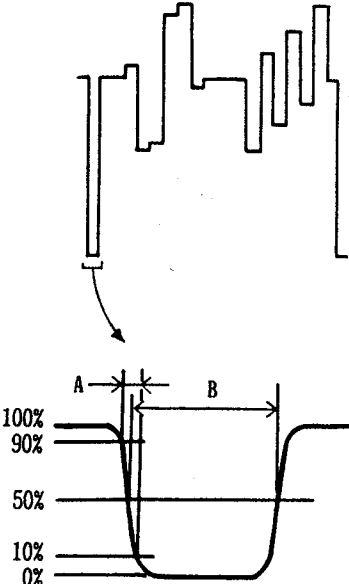
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the DUB/COMPONENT 1 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• COMPONENT 1/2 connector select switch on the connector panel: DUB/COMPONENT 1</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set COMPONENT select switch to former position.</p>	<p>TP19/MD-46P(C-5)</p>  <p>A (R-Y) = <math>0.93 \pm 0.01</math> Vp-p B (B-Y) = <math>0.93 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• For A ⊗RV201/DEC-42P(A-2)</li> <li>• For B ⊗RV202/DEC-42P(A-1)</li> </ul> <p>TRIG: 1411 SYNC HD</p>



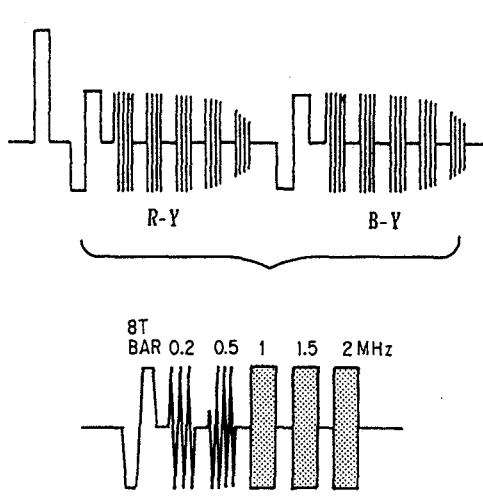
### 12-1-25. Composite Input Chroma Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP19/MD-46P(C-5)</p>  <p> <math>A (R-Y) = 0.93 \pm 0.01 V_{p-p}</math>  <math>B (B-Y) = 0.93 \pm 0.01 V_{p-p}</math> </p>	<p>(B-Y)</p> <p>RV2/DEC-42P(A-5)</p> <p>(R-Y)</p> <p>RV5/DEC-42P(A-5)</p> <p>TRIG: 1411 SYNC HD</p>

### 12-1-26. Chroma Reference Sync Adjustment

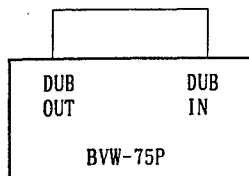
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>TP17/MD-46P(B-5)</p>  <p> <math>A = 220 \pm 20 \text{ nsec}</math>  <math>B = 2.00 \pm 0.05 \mu\text{sec}</math> </p>	<p>A: LV401/DEC-42P(J-2)</p> <p>B: RV505/DEC-42P(D-7)</p> <p>TRIG: 1411 SYNC HD</p>

# 12-1-27. COMPONENT 2 Frequency Response Adjustment

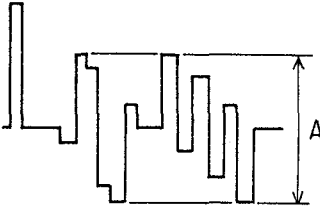
machine conditions for adjustment	specifications	adjustments														
<ul style="list-style-type: none"><li>• Supply a 60% multi burst signal to the COMPONENT 2 IN connector.</li><li>• INPUT SELECT sw: Y-R, B</li><li>• MODE: EE</li></ul>	<p>TP19/MD-46P(C-5) (WFM)</p>  <table><tr><th>Freq.</th><th>Spec.</th></tr><tr><td>8T bar</td><td>100%(Ref. )</td></tr><tr><td>0.2MHz</td><td>100 ± 3%</td></tr><tr><td>0.5MHz</td><td>100 ± 3%</td></tr><tr><td>1.0MHz</td><td>100 ± 3%</td></tr><tr><td>1.5MHz</td><td>100 ± 3%</td></tr><tr><td>2.0MHz</td><td>98 ± 5%</td></tr></table>	Freq.	Spec.	8T bar	100%(Ref. )	0.2MHz	100 ± 3%	0.5MHz	100 ± 3%	1.0MHz	100 ± 3%	1.5MHz	100 ± 3%	2.0MHz	98 ± 5%	<p>●CV403/DEC-42P(H-1)</p> <p>TRIG: EXT 1411 SYNC HD</p>
Freq.	Spec.															
8T bar	100%(Ref. )															
0.2MHz	100 ± 3%															
0.5MHz	100 ± 3%															
1.0MHz	100 ± 3%															
1.5MHz	100 ± 3%															
2.0MHz	98 ± 5%															

# 12-1-28. DUB CTDM Input Level Adjustment

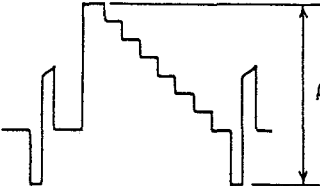
Dubbing cable



This Adjustment should be done after Sec. 12-5-21. C DUB OUT Level Adjustment.

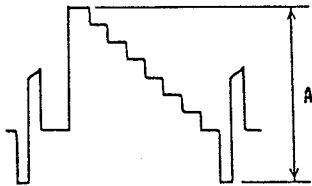
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Connect the DUB OUT and DUB IN connectors with a dubbing cable.</li> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> <li>• INPUT select sw: CTDM</li> </ul> <ul style="list-style-type: none"> <li>• After adjustment is completed, disconnect the dubbing cable.</li> </ul>	TP19/MD-46P(C-5)  $A = 0.93 \pm 0.01 \text{ Vp-p}$	RV406/DEC-42P(J-1)  TRIG: 1411 SYNC HD

# 12-1-29. Component Output Y Level Adjustment

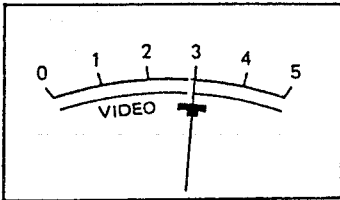
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	TP4/MD-46P(D-3)  $A = 1.0 \pm 0.01 \text{ Vp-p}$	RV402/DEC-42P(H-4)  TRIG: 1411 SYNC HD



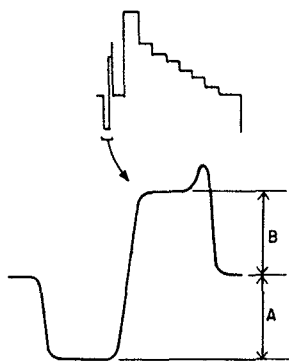
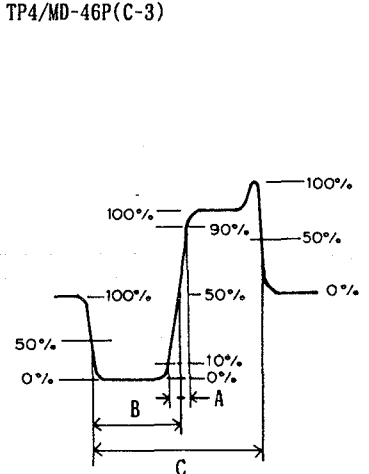
### 12-1-30. Composite Output Y Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>TP4/MD-46P(D-3)</p>  <p><math>A = 1.0 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV407/DEC-42P(H-6)</p> <p>TRIG: 1411 SYNC HD</p>


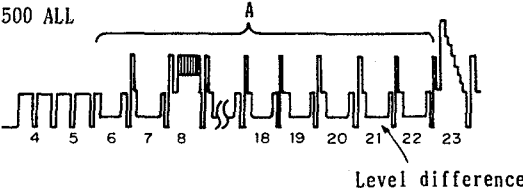
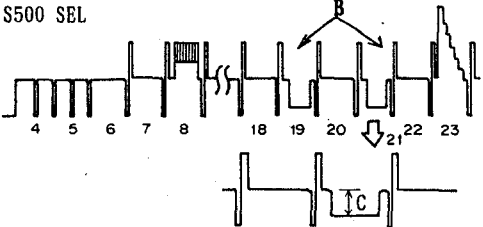
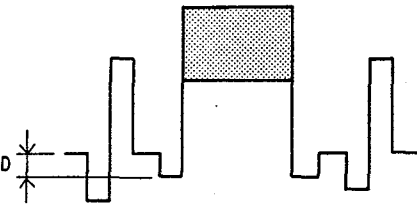
### 12-1-31. VIDEO Meter Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: EE</li> </ul>	<p>VIDEO METER</p>  <p>The pointer should be in the center of scale 3.</p>	<p>RV403/DEC-42P(H-5)</p>

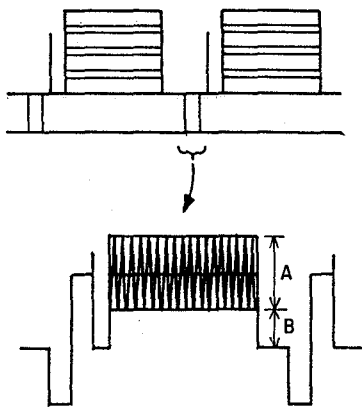
# 12-1-32. Y REF Sync Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• MODE: BE</li> </ul>	<p>Step 1 TP4/MD-46P(C-3)</p>  <p>A = 100% Ref. B = 125.0 ± 2.5%</p>	<p>RV404/DEC-42P(H-3)</p> <p>TRIG: 1411 SYNC HD</p>
	<p>Step 2 TP4/MD-46P(C-3)</p>  <p>A = 180 ± 20 nsec B = 2.65 ± 0.05 μsec C = 5.0 ± 0.1 μsec</p>	<p>A: LV400/DEC-42P(J-3) B: RV502/DEC-42P(E-5) C: RV503/DEC-42P(E-5)</p> <p>TRIG: 1411 SYNC HD</p>

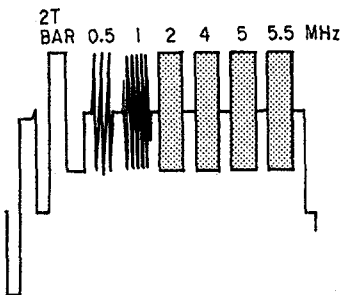
# 12-1-33. VITC Blanking and VISC Muting Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Set the VITC switch on the SY-64P board to ON.</li> <li>• MODE: EE</li> <li>• Turn S500/DEC-42P to ALL/SEL.</li> <li>• Fully turn RV408/DEC-42P counterclockwise once.</li> </ul>	<p>TP4/MD-46P(C-3)</p>  <p>S500/DEC-42P(E-7): ALL</p> <p>S500 ALL</p>  <p>Spec. 1</p> <p>Level differences should appear at portion A (6 to 22 lines).</p> <p>S500/DEC-42P(E-7): SEL</p> <p>S500 SEL</p>  <p>Spec. 2</p> <p>Level differences should appear at portion B (19 and 21 lines).</p> <p>Spec. 3</p> <p>Level differences C should be <math>0 \pm 10</math> mV or less.</p> <p>Spec. 4</p> <p>LINE 8</p>  <p>Level differences D (line 8) should be <math>0 \pm 10</math> mV or less.</p>	<p>RV408/DEC-42P(J-4)</p> <p>RV411/DEC-42P(J-4)</p> <p>TRIG: 1411 SYNC HD</p>

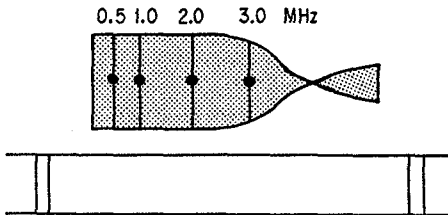
# 12-1-34. VISC Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Supply a 100% color-bar signal to the VIDEO IN connector.</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>MODE: EE</li> </ul>	<p>TP4/MD-46P(C-3)</p>  <p>Line 8</p> <p><math>A = 300 \pm 2\% \text{ mVp-p}</math>  <math>B = 200 \pm 10 \text{ mVp-p}</math></p>	<ul style="list-style-type: none"> <li>For A  RV508/CF-36P on the DEC-42P(D-7).</li> <li>For B  RV509/CF-36P on the DEC-42P(D-7).</li> </ul> <p>TRIG: 1411 SYNC (FLD REF)</p>

# 12-1-35. COMPONENT Y Frequency Response Adjustment

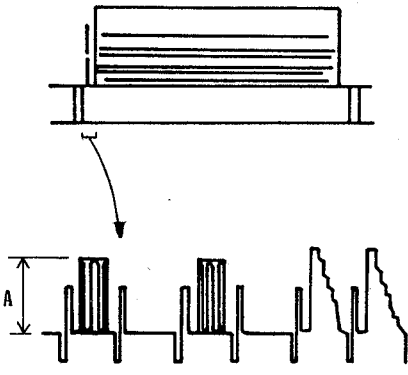
machine conditions for adjustment	specifications	adjustments																
<ul style="list-style-type: none"><li>• Supply a 60% multi burst signal to the COMPONENT 2 IN connector.</li><li>• INPUT SELECT sw: Y-R, B</li><li>• MODE: EE</li></ul>	<p>TP4/MD-46P(C-3)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2T bar</td><td>100%(Ref.)</td></tr><tr><td>0.5MHz</td><td>100 ± 2%</td></tr><tr><td>1.0MHz</td><td>100 ± 2%</td></tr><tr><td>2.0MHz</td><td>100 ± 2%</td></tr><tr><td>4.0MHz</td><td>100 ± 2%</td></tr><tr><td>5.0MHz</td><td>100 ± 2%</td></tr><tr><td>5.5MHz</td><td>100 ± 2%</td></tr></tbody></table>	Freq.	Level	2T bar	100%(Ref.)	0.5MHz	100 ± 2%	1.0MHz	100 ± 2%	2.0MHz	100 ± 2%	4.0MHz	100 ± 2%	5.0MHz	100 ± 2%	5.5MHz	100 ± 2%	<p>●CV402/DEC-42P(J-3)</p> <p>TRIG: 1411 SYNC HD</p>
Freq.	Level																	
2T bar	100%(Ref.)																	
0.5MHz	100 ± 2%																	
1.0MHz	100 ± 2%																	
2.0MHz	100 ± 2%																	
4.0MHz	100 ± 2%																	
5.0MHz	100 ± 2%																	
5.5MHz	100 ± 2%																	

# 12-1-36. COMPOSITE Y Frequency Response Adjustment

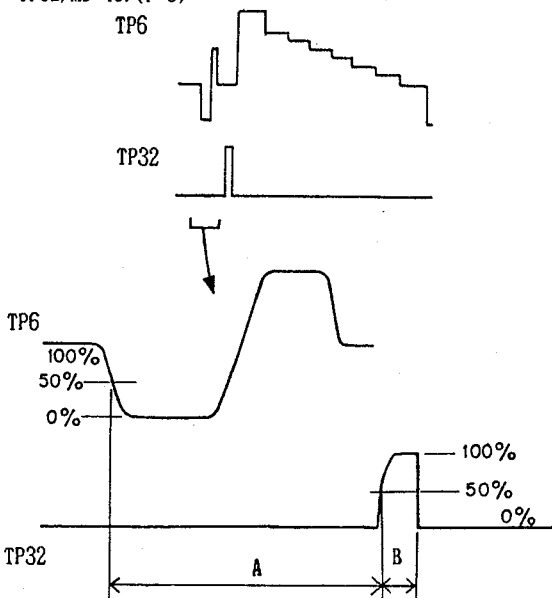
machine conditions for adjustment	specifications	adjustments										
<ul style="list-style-type: none"><li>• Supply a 60% V-sweep signal to the VIDEO IN connector.</li><li>• INPUT SELECT sw: COMPOSITE</li><li>• MODE: EE</li></ul>	<p>TP4/MD-46P(C-3)</p>  <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100% (Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 2%</td></tr><tr><td>2.0MHz</td><td>100 ± 1%</td></tr><tr><td>3.0MHz</td><td>80 ± 5%</td></tr></tbody></table>	Freq.	Level	0.5MHz	100% (Ref.)	1.0MHz	100 ± 2%	2.0MHz	100 ± 1%	3.0MHz	80 ± 5%	<p>●CV401/DEC-42P(H-6)</p> <p>TRIG: 1411 SYNC (FLD REF)</p>
Freq.	Level											
0.5MHz	100% (Ref.)											
1.0MHz	100 ± 2%											
2.0MHz	100 ± 1%											
3.0MHz	80 ± 5%											

## 12-2. MD-46P BOARD ADJUSTMENT

### 12-2-1. VITC Mix Level Adjustment

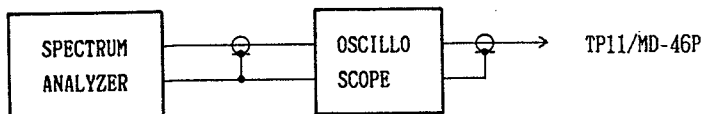
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP4/MD-46P(C-3)</p>  <p><math>A = 0.55 \pm 0.02 V_{p-p}</math></p>	<p>RV1/MD-46P(D-2)</p> <p>TRIG: 1411 SYNC HD</p>

### 12-2-2. Y Clamp Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP6/MD-46P(C-3) TP32/MD-46P(F-3)</p> <p>TP6</p>  <p>TP32</p> <p><math>A \text{ (Timing)} = 6.0 \pm 0.1 \mu\text{sec}</math> <math>B \text{ (Width)} = 2.0 \pm 0.1 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>• Timing</li> <li>• Width</li> </ul> <p>RV6/MD-46P(G-3) RV7/MD-46P(F-3)</p> <p>TRIG: 1411 SYNC HD</p>

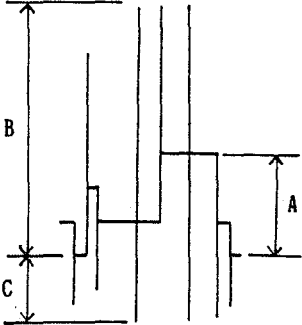
### 12-2-3. Y Deviation Adjustment

#### 【Connection】



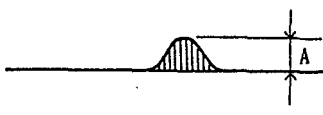
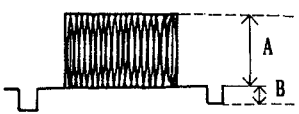
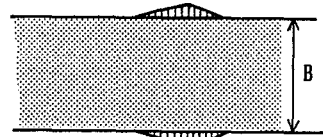
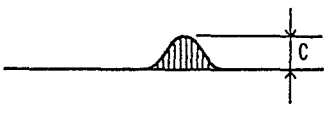
machine conditions for adjustment	specifications	adjustments
<b>Step 1 (METAL)</b> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% flat field signal to the COMPONENT 2 IN connector.</li> <li>• MODE: STANDBY</li> </ul>	<p>TP11/MD-46P(B-1)</p> <ul style="list-style-type: none"> <li>• Pedestal carrier adjustment Set the peak level on the center to 7.400MHz.</li> <li>• Deviation adjustment Set the gap between two peak levels to 1.400MHz.</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestal RV22/MD-46P(A-2)</li> <li>• Deviation RV3/MD-46P(A-3) (adjust alternately)</li> </ul>
<b>Step 2 (OXIDE)</b> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: STANDBY</li> </ul>	<ul style="list-style-type: none"> <li>• Sync tip carrier adjustment Set the peak level on the center to 5.000MHz.</li> <li>• Deviation adjustment Set the gap between two peak levels to 1.400MHz.</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestal RV42/MD-46P(A-2)</li> <li>• Deviation RV54/MD-46P(C-3)</li> </ul>

# 12-2-4. Y White/Dark Clip Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1 (OXIDE)</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, eject the cassette tape.</p>	<p>TP8/MD-46P(B-3)</p>  <p>A = 100 % reference  B = <math>250 \pm 5\%</math> (white clip)  C = <math>65 \pm 5\%</math> (dark clip)</p>	<ul style="list-style-type: none"> <li>• White clip  RV4/MD-46P(C-2)</li> <li>• Dark clip  RV5/MD-46P(D-2)</li> </ul> <p>TRIG: 1411 SYNC HD</p>
<p>Step 2 (METAL)</p> <ul style="list-style-type: none"> <li>• MODE: EE</li> <li>• Connect a mylar capacitor (<math>0.001\mu F</math>) between TP34/MD-46P(C-3) and TP35/MD-46P(C-3) board.</li> <li>• After adjustment is completed, remove the capacitor.</li> </ul>	<p>A = 100 % reference  B = <math>300 \pm 5\%</math> (white clip)  C = <math>150 \pm 5\%</math> (dark clip)</p>	<ul style="list-style-type: none"> <li>• White clip  RV44/MD-46P(C-2)</li> <li>• Dark clip  RV45/MD-46P(D-2)</li> </ul> <p>TRIG: 1411 SYNC HD</p>

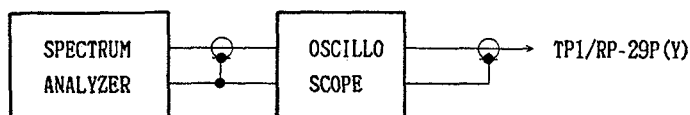


# 12-2-5. Y-REC HF Slice Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a H sweep signal to the COMPONENT 2 Y IN connector.</li> <li>• Using a VS12AX</li> <li>• MODE: EE</li> </ul>	<p>TP3/MD-46P(C-2)</p>  <p><math>A = 20 \pm 2 \text{ mVp-p (Slice)}</math></p>	<ul style="list-style-type: none"> <li>• Slice</li> <li>• RV34/MD-46P(C-2)</li> </ul>
<ul style="list-style-type: none"> <li>• H SWEEP GEN.: H SWEEP (0.5~8.0MHz)</li> </ul> <p>TP4/MD-46P(C-3)</p>  <ul style="list-style-type: none"> <li>• Adjust the signal generator so that A is <math>1 \pm 0.01 \text{ Vp-p}</math> and B is <math>0.3 \pm 0.01 \text{ Vp-p}</math>.</li> </ul>	<p>TP10/MD-46P(A-1)</p>  <p><math>B = 500 \pm 20 \text{ mVp-p (Level)}</math></p>	<ul style="list-style-type: none"> <li>• Level</li> <li>• RV38/MD-46P(C-2)</li> </ul>
<ul style="list-style-type: none"> <li>• Insert a BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP3/MD-46P(C-2)</p>  <p><math>C = 50 \pm 2 \text{ mVp-p (Slice)}</math></p>	<ul style="list-style-type: none"> <li>• Slice</li> <li>• RV33/MD-46P(C-2)</li> <li>TRIG: 1411 SYNC HD</li> </ul>

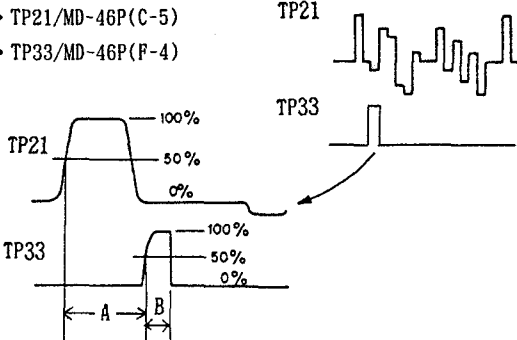
## 12-2-6. Y Modulator Balance Adjustment

### 【Connection】



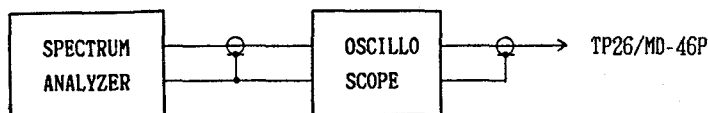
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20M cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP1/RP-29P(Y)(E-3)</p> <p>Minimize the secondary distortion.  <math>A \geq 40\text{dB}</math></p>	<p>RV8/MD-46P(A-2)</p>
<ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP1/RP-29P(Y)(E-3)</p> <p>Minimize the secondary distortion.  <math>A \geq 40\text{dB}</math></p>	

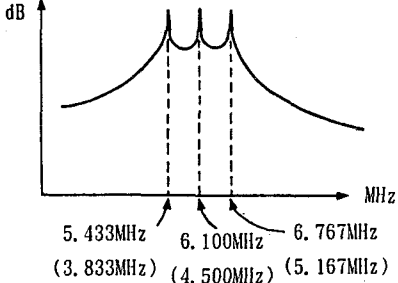
### 12-2-7. C Clamp Pulse Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<ul style="list-style-type: none"> <li>• TP21/MD-46P(C-5)</li> <li>• TP33/MD-46P(F-4)</li> </ul>  <p> <math>A = 2.40 \pm 0.05 \mu\text{sec (Timing)}</math>  <math>B = 0.6 \pm 0.05 \mu\text{sec (Width)}</math> </p>	<ul style="list-style-type: none"> <li>• Timing ●RV16/MD-46P(G-4)</li> <li>• Width ●RV17/MD-46P(F-4)</li> </ul> <p>TRIG: 1411 SYNC HD</p>

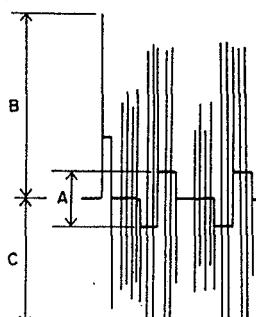
### 12-2-8. C Deviation Adjustment

【Connection】

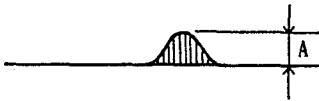

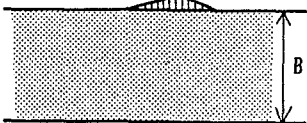
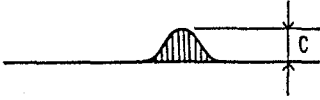


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: STANDBY</li> </ul>	<p>TP26/MD-46P(B-4)</p>  <p>           5.433MHz (3.833MHz) 6.100MHz (4.500MHz) 6.767MHz (5.167MHz)         </p> <p>           Pedestal carrier adjustment:            Set the center peak level to 6.100MHz.            Deviation adjustment:            Set the gap between two peaks (5.433MHz and 6.767MHz) to 1.334MHz.         </p>	<ul style="list-style-type: none"> <li>• Pedestal ●RV23/MD-46P(A-5)</li> <li>• Deviation ●RV13/MD-46P(A-5)</li> </ul>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: STANDBY</li> </ul>	<p>           Pedestal carrier adjustment:            Set the center peak level to 4.500MHz.            Deviation adjustment:            Set the gap between two peaks (3.833MHz and 5.167MHz) to 1.334MHz.         </p>	<ul style="list-style-type: none"> <li>• Pedestal ●RV43/MD-46P(A-4)</li> <li>• Deviation ●RV501/MD-46P(C-5)</li> </ul>

# 12-2-9. C White/Dark Clip Adjustment

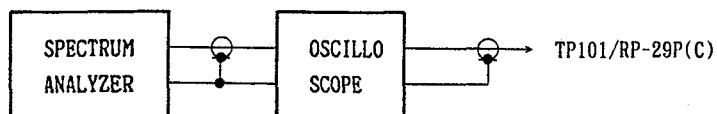
machine conditions for adjustment	specifications	adjustments
<p>Step 1 (OXIDE)</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, eject the cassette tape.</p>	<p>TP23/MD-46P(B-5)</p>  <p>A = 100% reference  B = <math>225 \pm 5\%</math> (high clip)  C = <math>130 \pm 5\%</math> (low clip)</p>	<ul style="list-style-type: none"> <li>• High clip  RV46/MD-46P(C-5)</li> <li>• Low clip  RV15/MD-46P(D-5)</li> </ul> <p>TRIG: 1411 SYNC HD</p>
<p>Step 2 (METAL)</p> <ul style="list-style-type: none"> <li>• MODE: EE</li> <li>• Connect a mylar capacitor (<math>0.001\mu F</math>) between TP36/MD-46P(C-5) and TP37/MD-46P(C-5) board.</li> </ul> <p>• After adjustment is completed, remove the capacitor.</p>	<p>A = 100% reference  B = <math>285 \pm 5\%</math> (high clip)  C = <math>195 \pm 5\%</math> (low clip)</p>	<ul style="list-style-type: none"> <li>• High clip  RV14/MD-46P(C-4)</li> <li>• Low clip  RV47/MD-46P(D-4)</li> </ul> <p>TRIG: 1411 SYNC HD</p>

# 12-2-10. C-REC HF Slice Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: CTDM</li> <li>• Supply a H sweep signal to the DUB/COMPONENT 1 C. CTDM IN connector.</li> <li>• Using a VS12AX</li> <li>• MODE: EE</li> </ul>	<p>TP18/MD-46P(C-5)</p>  <p><math>A = 10 \pm 2 \text{ mVp-p (Slice)}</math></p>	<ul style="list-style-type: none"> <li>• Slice</li> <li>• RV35/MD-46P(C-4)</li> </ul>
<ul style="list-style-type: none"> <li>• H SWEEP GEN.: H SWEEP (0.5~8.0MHz)</li> </ul> <p>TP19/MD-46P(D-5)</p>  <ul style="list-style-type: none"> <li>• Adjust the signal generator so that A is <math>1.10 \pm 0.01 \text{ Vp-p}</math> and B is <math>0.3 \pm 0.01 \text{ Vp-p}</math>.</li> </ul>	<p>TP25/MD-46P(A-4)</p>  <p><math>B = 500 \pm 20 \text{ mVp-p (Level)}</math></p>	<ul style="list-style-type: none"> <li>• Level</li> <li>• RV39/MD-46P(C-4)</li> </ul>
<ul style="list-style-type: none"> <li>• Insert a BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP18/MD-46P(C-5)</p>  <p><math>C = 10 \pm 2 \text{ mVp-p (Slice)}</math></p>	<ul style="list-style-type: none"> <li>• Slice</li> <li>• RV37/MD-46P(C-4)</li> </ul> <p>TRIG: 1411 SYNC HD</p>

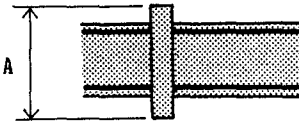
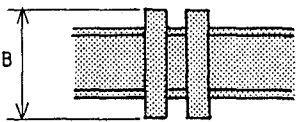
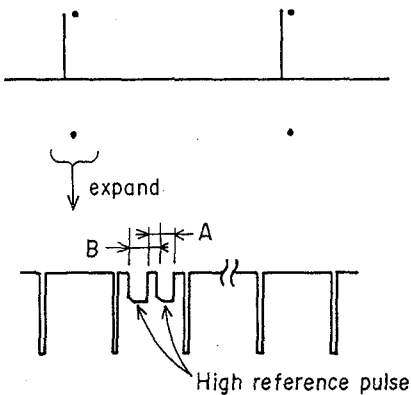
# 12-2-11. C Modulator Balance Adjustment

## 【Connection】



machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20M cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP101/RP-29P(C)(E-3)</p> <p>Minimize the secondary distortion.  <math>A \geq 40\text{dB}</math></p>	<p>RV18/MD-46P(A-5)</p>
<ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>TP101/RP-29P(C)(E-3)</p> <p>Minimize the secondary distortion.  <math>A \geq 40\text{dB}</math></p>	

# 12-2-12. White Reference Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R,B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Set S1 on MD-46P(A-3) board to ON.</li> <li>• MODE: EE</li> <li>• Using S2 on the MD-46P(G-2) board set the gate timing to 19H during V blanking period.</li> </ul>	<p>TP11/MD-46P(B-1)</p>  <p><math>A = 0.37 \pm 0.03 \text{ Vp-p}</math></p>	<p>RV55/MD-46P(C-1)</p> <p>TRIG: 1411 SYNC VD</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Same conditions in Step 1.</li> </ul>	<p>TP26/MD-46P(B-3)</p>  <p><math>B = 0.37 \pm 0.03 \text{ Vp-p}</math></p>	<p>RV56/MD-46P(D-4)</p> <p>TRIG: 1411 SYNC VD</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Chroma signal: Non signal (pedestal level)</li> <li>• Y signal: 50% flat field signal</li> </ul> <p>• After adjustment is completed, set S1 on the MD-46P(A-3) board to off.</p>	<p>TP401/TBC-7D(C-2)</p>  <p><math>A = 32 \pm 1 \mu\text{sec}</math></p> <p><math>B = 32 \pm 1 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>• Timing (A)</li> <li>• RV57/MD-46P(F-2)</li> <li>• Timing (B)</li> <li>• RV58/MD-46P(G-2)</li> </ul> <p>TRIG: 1411 SYNC VD</p>

### 12-3. RP-29P (Y) BOARD ADJUSTMENT

The RP-29P (Y) board adjustments are as follows:

- 12-3-2 Y-Metal REC Current & Secondary Distortion Adjustment (RV1, RV3, RV5, and RV6)  
↓
- 12-3-3 Y-Oxide REC Current & Secondary Distortion Adjustment (RV2 and RV4)  
↓
- 12-3-4 Y-REC RF Frequency Response Adjustment (Steps 1 and 2) (RV7 and RV9)  
↓
- 12-3-2 Y-Metal REC Current & Secondary Distortion Adjustment (Check)  
↓
- 12-3-4 Y-REC RF Frequency Response Adjustment (Step 3) (RV8 and RV10)  
↓
- 12-3-3 Y-Oxide REC Current & secondary Distortion Adjustments (Check)  
↓
- 12-3-5 Y-OA Frequency Response Check

This adjustment cannot be performed without adjustment the DM-56P board.

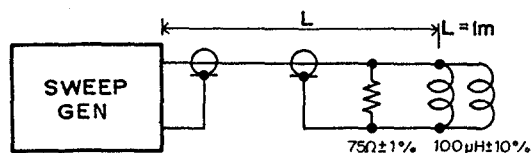
Note: The "Y-PB RF Frequency Response Adjustment" in 12-3-1 is used to adjust the DM-56P board.



## 12-3-1. Y-PB RF Frequency Response Adjustment

### • Head coupling tool

To make this adjustment, stop the head drum rotation without a cassette tape and L-couple the sweep signal with the video head using two inductors (approx.  $100 \mu\text{H} \times 2$ ).



Put the inductors near the video head.


Sweep signal range: 1 to 20 MHz

### • Network analyzer

MAG	0.5 dB
DLY	10 nsec
CF	10 MHz
SPAN	20 MHz
ST	4.0 sec
IRG	0 dB
RBW	10 kHz
VBW	10 kHz
DR	1 $\mu\text{sec}$

• This adjustment must be adjusted first of Play back system.

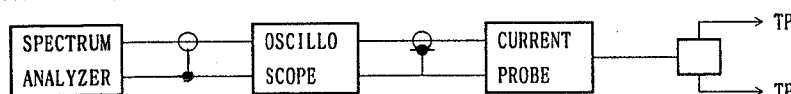
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• MODE: EE</li> <li>• Close the head coupling tool in the R/P Y A channel head.</li> <li>• Connect the network analyzer via an oscilloscope to CN110-7C on the DM-56P board.</li> <li>• Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP3/DM-56P(C-4)</p> <p><math>A = 0.7 \pm 0.1\text{Vp-p}</math> (6MHz through 8MHz portion)</p>	<p>CN110-7C/DM-56P(B-7)</p> <p><math>A \leq 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10 MHz)</p> <p><math>C \leq 10 \text{ nsec}</math> (Delay difference between 3 MHz and 12 MHz)</p> <p><math>B \leq 1\text{dB}</math> (Level difference between 2 MHz and 12 MHz)</p>	<p>CH-A: RV11/RP-29P(Y)(B-3)</p>

<p>Step 2</p> <ul style="list-style-type: none"> <li>• Close the head coupling tool in the R/P Y B channel head.</li> <li>• Connect the network analyzer via an oscilloscope to CN110-11C on the DM-56P board.</li> <li>• Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP3/DM-56P(C-4)</p>  <p><math>A = 0.7 \pm 0.1V_{p-p}</math> (6MHz through 8MHz portion)</p>	<p>CN110-11C/DM-56P(B-7)</p> <p><math>A \leq 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10 MHz)</p> <p><math>C \leq 10 \text{ nsec}</math> (Delay difference between 3 MHz and 12 MHz)</p> <p><math>B \leq 1 \text{ dB}</math> (Level difference between 2 MHz and 12 MHz)</p>	<p>CH-B:</p> <p>RV12/RP-29P(Y)(D-4)</p>
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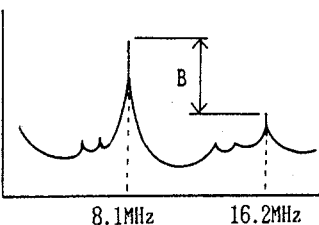
## 12-3-2. Y-Metal REC Current and Secondary Distortion Adjustments

- Before performing this adjustment, perform Sec. 12-6-1 through 12-6-11.

### 【Connection】

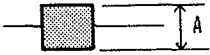


Be sure that the B/W LIMIT switch of the oscilloscope is set to off.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Remove SP1(C-3) and SP2(C-1) on the RP-29P(Y) board.</li> <li>• Using a shorting clip, short between TP3 and TP4, and TP5 and TP6.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20M cassette tape.</li> <li>• MODE: REC</li> </ul> <p>• After adjustment is completed, remove the shorting clips and insert SP1(C-3) and SP2(C-1).</p>	<p>CH-A: TP3-TP4/RP-29P(Y)(C-3)(C-3)</p> <p>CH-B: TP5-TP6/RP-29P(Y)(C-2)(C-2)</p> <p>Using a current probe</p> <p>Waveform on oscilloscope</p>  <p><math>A = 50 \pm 1\%</math> mA</p> <p>Using a spectrum analyzer</p>  <p>8.1MHz 16.2MHz</p> <p>Minimize 16.2 MHz.</p> <p><math>B \geq 40\text{dB}</math></p>	<ul style="list-style-type: none"> <li>• Level adjustment</li> </ul> <p>CH-A:</p> <p>RV1/RP-29P(Y)(D-3)</p> <p>CH-B:</p> <p>RV3/RP-29P(Y)(D-1)</p> <ul style="list-style-type: none"> <li>• Secondary distortion adjustment</li> </ul> <p>CH-A:</p> <p>RV5/RP-29P(Y)(D-3)</p> <p>CH-B:</p> <p>RV6/RP-29P(Y)(D-1)</p> <p>TRIG: TP901/DM-56P(C-1)</p>

### 12-3-3. Y-Oxide REC Current and Secondary Distortion Adjustments

• Before performing this adjustment, perform Sec. 12-6-1 through 12-6-12.

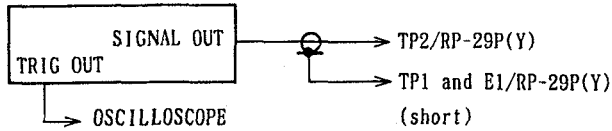
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Remove SP1(C-3) and SP2(C-1) on the RP-29P(Y) board.</li> <li>• Using a shorting clip, short between TP3 and TP4, and TP5 and TP6.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: REC</li> <li>• After adjustment is completed, remove the shorting clips and insert SP1(C-3) and SP2(C-1).</li> </ul>	<p>CH-A: TP3-TP4/RP-29P(Y)(C-3)(C-3) CH-B: TP5-TP6/RP-29P(Y)(C-2)(C-2)</p> <p>Using a current probe</p> <p>Waveform on oscilloscope</p>  <p><math>A = 33 \pm 1\frac{1}{2} \text{ mA}</math></p>	<p>CH-A: ●RV2/RP-29P(Y)(D-4) CH-B: ●RV4/RP-29P(Y)(D-2)</p> <p>TRIG: TP901/DM-56P(C-1)</p>

#### 12-3-4. Y-REC RF Frequency Response Adjustment

- Before performing this adjustment, perform Sec. 12-6-1 through 12-6-12.

##### 【Connection】

SWEEP GENERATOR (VS12AX or the equivalent)



##### 【Setting】

(For example)

- VS12AX (Manufacturer: SHIBASOKU)

NTSC/PAL	PAL
COMB/NORM	NORM
SWEEP H/V	V
VAR MARKER	ON, 5.0MHz
FIXED MARKER	OFF
TRIG HD/VD	VD

SIGNAL SELECT

SWEEP CHROMA/VIDEO	VIDEO
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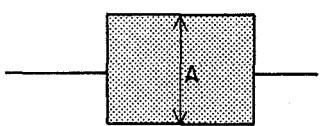
SIGNAL LEVEL

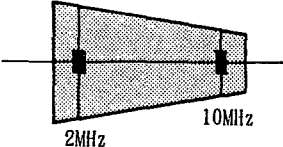
SYNC	} ALL OFF
BURST	
SET UP	

ATTENUATOR	ALL OFF
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- OSCILLOSCOPE

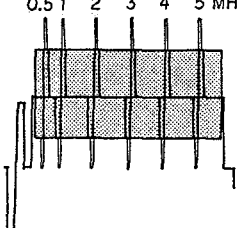
BAND WIDTH LIMIT	OFF
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machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• POWER OFF</li> <li>• After this step adjustment is completed, do not touch the control and switches other than the MARKER switches of the VS12AX.</li> </ul>	<p>TP2/RP-29P(Y)(E-4)</p> <p>Sweep signal level setting</p>  <p><math>A = 0.50 \pm 0.05 \text{ Vp-p (at 5 MHz)}</math></p>	<p>VIDEO LEVEL VR/VS12AX</p> <p>TRIG: TP901/DM-56P(C-1)</p>

<p>Step 2</p> <ul style="list-style-type: none"><li>Remove SP1(C-3) and SP2(C-2) on the RP-29P(Y) board.</li><li>Using a shorting clip, short between TP3 and TP4, and TP5 and TP6.</li><li>Insert the BCT-20M cassette tpae.</li><li>MODE: REC</li><li>VAR MARKER/VS12AX: OFF</li><li>MARKER/VS12AX: 2MHz ON 10MHz ON</li></ul>	<p>CH-A: TP3-TP4/RP-29P(Y)(C-3)(C-3) CH-B: TP5-TP6/RP-29P(Y)(C-2)(C-2)</p> <p>Using a current probe</p>  <table border="1"><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2 MHz</td><td>100 %(Ref.)</td></tr><tr><td>10 MHz</td><td>55 ±1%</td></tr></tbody></table>	Freq.	Level	2 MHz	100 %(Ref.)	10 MHz	55 ±1%	<p>CH-A: ●RV7/RP-29P(Y)(C-4) CH-B: ●RV9/RP-29P(Y)(C-2)</p>
Freq.	Level							
2 MHz	100 %(Ref.)							
10 MHz	55 ±1%							
<p>Step 3</p> <ul style="list-style-type: none"><li>Insert the BCT-20G cassette tpae.</li><li>MODE: REC</li></ul>	<p>CH-A: TP3-TP4/RP-29P(Y)(C-3)(C-3) CH-B: TP5-TP6/RP-29P(Y)(C-2)(C-2)</p> <table border="1"><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2 MHz</td><td>100 %(Ref.)</td></tr><tr><td>10 MHz</td><td>52 ±15%</td></tr></tbody></table>	Freq.	Level	2 MHz	100 %(Ref.)	10 MHz	52 ±15%	<p>CH-A: ●RV8/RP-29P(Y)(C-4) CH-B: ●RV10/RP-29P(Y)(C-2)</p> <p>TRIG: TP901/DM-56P</p>
Freq.	Level							
2 MHz	100 %(Ref.)							
10 MHz	52 ±15%							
<p>Step 4</p> <ul style="list-style-type: none"><li>After adjustment is completed, remove the shorting clips and insert SP1 and SP2.</li></ul>	<p>Check that the secondary distortion, recording current, and PB frequency response satisfy the specification. When the specification is not satisfied, readjust Sections 12-3-2 through 12-3-4.</p>							

### 12-3-5. Y-OA Frequency Response Check

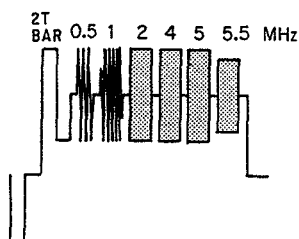
- Before performing this adjustment, perform Sec. 12-6-1 through 12-6-12.

machine conditions for adjustment	specifications	adjustments														
<p>Step 1</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: CTDM</li><li>• Supply a 60% H. sweep signal to the DUB/COMPONENT 1 IN connector.</li><li>• Insert the BCT-20M cassette tape.</li><li>• MODE: REC/PB</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A)</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B)</li><li>• DT SELECT sw: OFF</li></ul>	<p>DUB/COMPONENT 1 Y OUT</p> <p>0.5 1 2 3 4 5 MHz</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100%(Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 4%</td></tr><tr><td>2.0MHz</td><td>100 ± 4%</td></tr><tr><td>3.0MHz</td><td>100 ± 4%</td></tr><tr><td>4.0MHz</td><td>100 ± 4%</td></tr><tr><td>5.0MHz</td><td>100 ± 4%</td></tr></table> <ul style="list-style-type: none"><li>• Level difference between CH-A and CH-B should be less than 5%.</li><li>• When the specification is not satisfied, perform the following steps. However, step 4 in Sec. 12-3-4 should be also performe.</li></ul>	Freq.	Level	0.5MHz	100%(Ref.)	1.0MHz	100 ± 4%	2.0MHz	100 ± 4%	3.0MHz	100 ± 4%	4.0MHz	100 ± 4%	5.0MHz	100 ± 4%	<p>TRIG: INT</p>
Freq.	Level															
0.5MHz	100%(Ref.)															
1.0MHz	100 ± 4%															
2.0MHz	100 ± 4%															
3.0MHz	100 ± 4%															
4.0MHz	100 ± 4%															
5.0MHz	100 ± 4%															
Step 1-1	When the CH-A level is low, perform Step 2 and 4 in Sec. 12-3-4, and raise the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-2 and repeat the above steps.															
Step 1-2	When the CH-A level is high, perform Step 2 and 4 in Sec. 12-3-4, and lower the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-2 and repeat the above steps.															
Step 1-3	When the CH-B level is low, perform Step 1-1 on CH-B.															
Step 1-4	When the CH-B level is high, perform Step 1-2 on CH-B.															

### Step 2

- INPUT SELECT sw: Y-R, B
- Supply a multi burst signal (METAL) to the COMPONENT 2 Y IN connector.
- Insert the BCT-20M cassette tape.
- MODE: REC/PB
- Push FIELD SELECT 1 + 3 on the WFM (For CH-A).
- Push FIELD SELECT 2 + 4 on the WFM (For CH-B).
- DT SELECT sw: OFF

### COMPONENT 2 Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
2T bar	100 % (Ref.)
0.5MHz	100 $\pm$ 4%
1.0MHz	100 $\pm$ 4%
2.0MHz	100 $\pm$ 4%
4.0MHz	100 $\pm$ 4%
5.0MHz	98 $\pm$ 4%
5.5MHz	75% or more

- Level difference between CH-A and CH-B should be less than 5%.
- When the specification is not satisfied, perform the following steps. However, step 4 in Sec. 12-3-4 should be also performed.

TRIG: INT

### Step 2-1

When the CH-A level is low, perform Step 2 and 4 in Sec. 12-3-4, and raise the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-2 and repeat the above steps.

### Step 2-2

When the CH-A level is high, perform Step 2 and 4 in Sec. 12-3-4, and lower the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-2 and repeat the above steps.

### Step 2-3

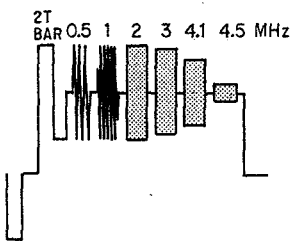
When the CH-B level is low, perform Step 2-1 on CH-B.

### Step 2-4

When the CH-B level is high, perform Step 2-2 on CH-B.

### Step 3

- Repeat Step 1 and Step 2 until the specification is satisfied.

<p>Step 4</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette tape.</li><li>• MODE: REC/PB</li><li>• Supply a multi burst signal (OXIDE) to the COMPONENT 2 Y IN connector.</li><li>• INPUT SELECT sw: Y-R, B</li><li>• DT SELECT sw: OFF</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul>	<p>COMPONENT 2 Y OUT</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>2T bar</td><td>100 % (Ref.)</td></tr><tr><td>0.5MHz</td><td>100 ± 4%</td></tr><tr><td>1.0MHz</td><td>100 ± 4%</td></tr><tr><td>2.0MHz</td><td>98 ± 5%</td></tr><tr><td>3.0MHz</td><td>85 ± 3%</td></tr><tr><td>4.1MHz</td><td>60% or more</td></tr><tr><td>4.5MHz</td><td>—</td></tr></table> <ul style="list-style-type: none"><li>• When the specification is not satisfied, perform the following steps. However, step 4 in Sec. 12-3-4 should be also performed.</li></ul>	Freq.	Level	2T bar	100 % (Ref.)	0.5MHz	100 ± 4%	1.0MHz	100 ± 4%	2.0MHz	98 ± 5%	3.0MHz	85 ± 3%	4.1MHz	60% or more	4.5MHz	—	
Freq.	Level																	
2T bar	100 % (Ref.)																	
0.5MHz	100 ± 4%																	
1.0MHz	100 ± 4%																	
2.0MHz	98 ± 5%																	
3.0MHz	85 ± 3%																	
4.1MHz	60% or more																	
4.5MHz	—																	
<p>Step 4-1</p>	<p>When the CH-A level is low, perform Step 3 and 4 in Sec. 12-3-4, and raise the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-3 and repeat the above steps.</p>																	
<p>Step 4-2</p>	<p>When the CH-A level is high, perform Step 3 and 4 in Sec. 12-3-4, and lower the 10MHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-3-3 and repeat the above steps.</p>																	
<p>Step 4-3</p>	<p>When the CH-B level is low, perform Step 4-1 on CH-B.</p>																	
<p>Step 4-4</p>	<p>When the CH-B level is high, perform Step 4-2 on CH-B.</p>																	



#### 12-4. RP-29P (C) BOARD ADJUSTMENT

When adjusting the RP-29P (C) board, set S1 on the AFM-1 board to ON.

After adjustment is completed, set S1 on the AFM-1 board to OFF.

The RP-29P(C) board adjustments are as follows:

- 1 2 - 4 - 2 C-Metal Recording Current & Secondary Distortion Adjustment  
(RV101, RV103, RV105, RV106)  
↓
- 1 2 - 4 - 3 C-Oxide Recording Current & Secondary Distortion Adjustment  
(RV102 and RV104)  
↓
- 1 2 - 4 - 4 C-REC RF Frequency Response Adjustment (Steps 1 and 2)  
(RV107 and RV109)  
↓
- 1 2 - 4 - 2 C-Metal Recording Current & Secondary Distortion Adjustment (Check)  
↓
- 1 2 - 4 - 4 C-REC RF Frequency Response Adjustment (Step 3)  
(RV108 and RV110)  
↓
- 1 2 - 4 - 3 C-Oxide Recording Current & Secondary Distortion Adjustment (Check)  
↓
- 1 2 - 4 - 5 C-OA Frequency Response Check  
(When Section 12-4-5 is not satisfied, readjust Section 12-4-2.)  
↓
- 1 2 - 4 - 6 Crosstalk Adjustment

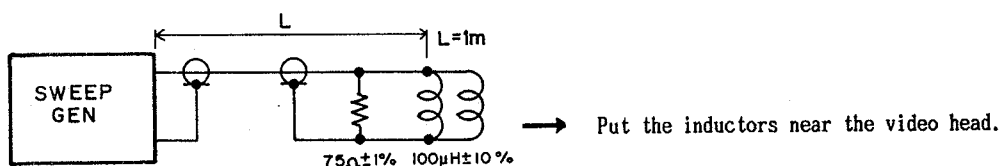
This adjustment cannot be performed without adjusting the DM-56P board.

Note: The "C-PB RF Frequency Response Adjustment" in 12-4-1 is used to adjust the DM-56P board.

## 12-4-1. C-PB RF Frequency Response Adjustment

### • Head coupling tool

To make this adjustment, stop the head drum rotation without a cassette tape and L-couple the sweep signal with the video head using two inductors (approx.  $100 \mu\text{H} \times 2$ ).



Sweep signal range: 1 to 20 MHz

### • Network analyzer

MAG	0.5 dB
DLY	10 nsec
CF	10 MHz
SPAN	20 MHz
ST	4.0 sec
IRG	0 dB
RBW	10 kHz
VBW	10 kHz
DR	1 $\mu\text{sec}$

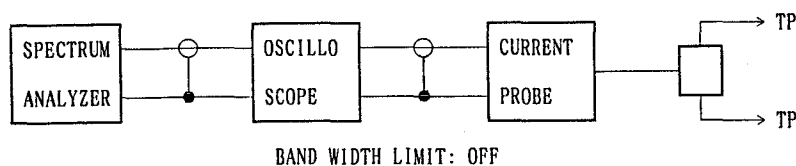
• This adjustment must be adjusted first of play back system.

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Remove the DM-56P board from the unit, and insert the EX-151 extension board.</li> <li>Set the network analyzer output to -6 dB.</li> <li>Connect the network analyzer via oscilloscope to TP107 on the RP-29P(C) board.</li> <li>MODE: EE</li> <li>Close the head coupling tool in the R/P C A channel head.</li> </ul>	<p>TP107/RP-29P(C)(A-4)</p> <p><math>A = -3.5 \pm 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10 MHz)</p> <p><math>B \leq 10 \text{ nsec}</math> (Delay difference between 4 MHz and 12 MHz)</p>	<p>CH-A: ●RV111/RP-29P(C)(B-3)</p>

<p>Step 2</p> <ul style="list-style-type: none"> <li>• Connect the network analyzer via oscilloscope to TP108 on the RP-29P(C) board.</li> <li>• Close the head coupling tool in the R/P C B channel head.</li> <li>• After adjustment is completed, set the DM-56P board.</li> </ul>	<p>TP108/RP-29P(C)(A-1) (GND: E1)</p> <p><math>A = -3.5 \pm 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10 MHz)</p> <p><math>B \leq 10 \text{ nsec}</math> (Delay difference between 4 MHz and 12 MHz)</p>	<p>CH-B: ●RV112/RP-29P(C)(B-1)</p>
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#### 12-4-2. C-Metal Recording Current and Secondary Distortion Adjustments

##### 【Connection】

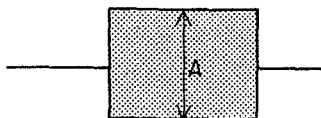


• Before performing this adjustment, perform Sec. 12-6-13 through 12-6-21.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Remove SP101(C-3) and SP102(C-2) on the RP-29P(C) board.</li> <li>• Using a shorting clip, short between TP103 and TP104, and TP105 and TP106.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20M cassette tape.</li> <li>• MODE: REC</li> <li>• After adjustment is completed, remove the shorting clips and insert SP101(C-3) and SP102(C-2).</li> </ul>	<p>CH-A: TP103-TP104/RP-29P(C)(C-3)(C-3) CH-B: TP105-TP106/RP-29P(C)(C-2)(C-2)</p> <p>Using a current probe</p> <p>Waveform on oscilloscope</p> <p><math>A = 60 \pm 10 \text{ mA}</math></p> <p>Using a spectrum analyzer</p> <p>Minimize 12.2MHz. <math>B \geq 40 \text{ dB}</math></p>	<ul style="list-style-type: none"> <li>• Level adjustment CH-A: ●RV101/RP-29P(C)(D-3) CH-B: ●RV103/RP-29P(C)(D-1)</li> <li>• Secondary distortion adjustment CH-A: ●RV105/RP-29P(C)(D-3) CH-B: ●RV106/RP-29P(C)(D-1)</li> <li>TRIG: TP902/DM-56P(F-1)</li> </ul>

### 12-4-3. C-Oxide Recording Current and Secondary Distortion Adjustments

- Before performing this adjustment, perform Sec. 12-6-13 through 12-6-21.

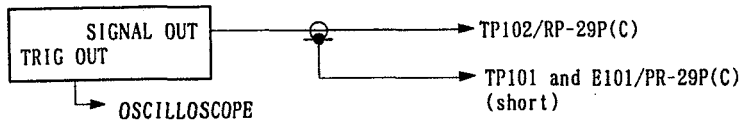
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Remove SP101(C-3) and SP102(C-2) on the RP-29P(C)board.</li> <li>• Using a shorting clip, short between TP103 and TP104, and TP105 and TP106.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: REC</li> </ul>	<p>CH-A: TP103-TP104/RP-29P(C)(C-3)(C-3)  CH-B: TP105-TP106/RP-29P(C)(C-2)(C-2)</p> <p>Using a current probe</p> <p>Waveform on oscilloscope</p>  <p><math>A = 35 \pm 5 \text{ mA}</math></p>	<p>CH-A:  ●RV102/RP-29P(C)(D-4)  CH-B:  ●RV104/RP-29P(C)(D-2)</p> <p>TRIG: TP902/DM-56P(F-1)</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, remove the shorting clips and insert SP101(C-3) and SP102(C-2).</li> </ul>		

#### 12-4-4. C-REC RF Frequency Response Adjustment

- Before performing this adjustment, perform Sec. 12-6-13. through 12-6-21.

##### 【Connection】

SWEEP GENERATOR (VS12AX or the equivalent)



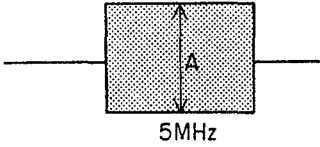
##### 【Setting】

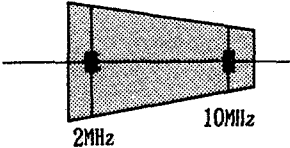
(For example)

- VS12AX (Manufacturer: SHIBASOKU)
 

NTSC/PAL	PAL
COMB/NORM	NORM
SWEEP H/V	V
VAR MARKER	ON, 5.0MHz
FIXED MARKER	OFF
TRIG HD/VD	VD
SIGNAL SELECT	
SWEEP CHROMA/VIDEO	VIDEO
SIGNAL LEVEL	
SYNC	} ALL OFF
BURST	
SETUP	
ATTENUATOR	ALL OFF
- OSCILLOSCOPE
 

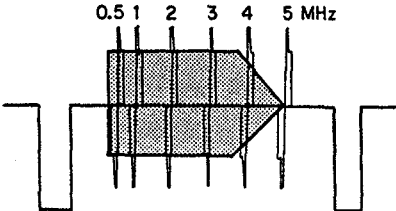
BAND WIDTH LIMIT	OFF
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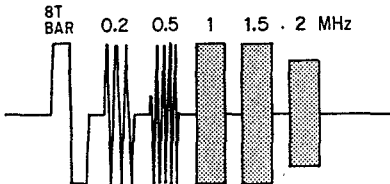
machine conditions for adjustment	specifications	adjustments
Step 1 • POWER OFF.  • After this Step adjustment is completed, do not touch the controls and switches other than the MARKER switches of the VS12AX.	TP102/RP-29P(C)(E-4)   $A = 0.50 \pm 0.05 \text{ Vp-p (at 5 MHz)}$	VIDEO LEVEL VR/VS12AX          TRIG: TP902/DM-56P(F-1)

<p>Step 2</p> <ul style="list-style-type: none"><li>Remove SP101(C-3) and SP102(C-2) on the RP-29P(C) board.</li><li>Using a shorting clip, short between TP103 and TP104, and TP105 and TP106.</li><li>Insert the BCT-20M cassette tape.</li><li>MODE: REC</li><li>VAR MARKER/VS12AX: OFF</li><li>MARKER/VS12AX: 2MHz ON 10MHz ON</li></ul>	<p>CH-A: TP103-TP104/RP-29P(C)(C-3)(C-3) CH-B: TP105-TP106/RP-29P(C)(C-2)(C-2)</p> <p>Using a current probe</p>  <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>2 MHz</td><td>100 % (Ref.)</td></tr><tr><td>10MHz</td><td>70 ± 1½ %</td></tr></table>	Freq.	Level	2 MHz	100 % (Ref.)	10MHz	70 ± 1½ %	<ul style="list-style-type: none"><li>METAL</li><li>CH-A: ●RV107/RP-29P(C)(C-4)</li><li>CH-B: ●RV109/RP-29P(C)(C-2)</li></ul> <p>TRIG: TP902/DM-56P(F-1)</p>
Freq.	Level							
2 MHz	100 % (Ref.)							
10MHz	70 ± 1½ %							
<p>Step 3</p> <ul style="list-style-type: none"><li>Insert the BCT-20G cassette tape.</li><li>MODE: REC</li></ul>	<p>TP103-TP104/RP-29P(C)(C-3)(C-3) TP105-TP106/RP-29P(C)(C-2)(C-2)</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>2 MHz</td><td>100 % (Ref.)</td></tr><tr><td>10 MHz</td><td>60 ± 1½ %</td></tr></table>	Freq.	Level	2 MHz	100 % (Ref.)	10 MHz	60 ± 1½ %	<ul style="list-style-type: none"><li>OXIDE</li><li>CH-A: ●RV108/RP-29P(C)(C-4)</li><li>CH-B: ●RV110/RP-29P(C)(C-2)</li></ul>
Freq.	Level							
2 MHz	100 % (Ref.)							
10 MHz	60 ± 1½ %							
<p>Step 4</p> <ul style="list-style-type: none"><li>After adjustment is completed, remove the shorting clips and insert SP101(C-3) and SP102(C-2).</li></ul>	<p>Check that the secondary distortion, recording current, and PB frequency response satisfy the specification.</p> <p>If the specification is not satisfied, readjust Sections 12-4-2 through 12-4-4.</p>							

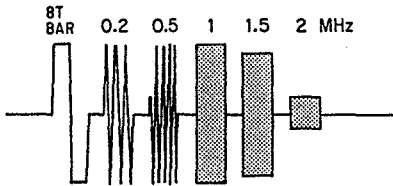
# 12-4-5. C-OA Frequency Response Check

• Before performing this adjustment, perform Sec. 12-6-13 through 12-6-21.

machine conditions for adjustment	specifications	adjustments												
<p>Step 1</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: CTDm</li><li>• Supply a 60% H. sweep signal to the DUB/COMPONENT 1 IN connector.</li><li>• Insert the BCT-20M cassette tape.</li><li>• MODE: REC/PB</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li><li>• DT SELECT sw: OFF</li></ul>	<p>DUB/COMPONENT 1 R-Y/B-Y OUT</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100% (Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 4%</td></tr><tr><td>2.0MHz</td><td>100 ± 4%</td></tr><tr><td>3.0MHz</td><td>98 ± 4%</td></tr><tr><td>4.0MHz</td><td>75% or more</td></tr></table> <ul style="list-style-type: none"><li>• Level difference between CH-A and CH-B should be less than 5%.</li><li>• When the specification is not satisfied, perform the following steps. However, step 4 in Sec. 12-4-4 should be also performed.</li></ul>	Freq.	Level	0.5MHz	100% (Ref.)	1.0MHz	100 ± 4%	2.0MHz	100 ± 4%	3.0MHz	98 ± 4%	4.0MHz	75% or more	<p>TRIG: TP401/DM-56P(E-6)</p>
Freq.	Level													
0.5MHz	100% (Ref.)													
1.0MHz	100 ± 4%													
2.0MHz	100 ± 4%													
3.0MHz	98 ± 4%													
4.0MHz	75% or more													
<p>Step 1-1</p>	<p>When the CH-A level is low, perform Step 2 and 4 in Sec. 12-4-4, and raise the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-2 and repeat the above steps.</p>													
<p>Step 1-2</p>	<p>When the CH-A level is high, perform Step 2 and 4 in Sec. 12-4-4, and lower the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-2 and repeat the above steps.</p>													
<p>Step 1-3</p>	<p>When the CH-B level is low, perform Step 1-1 on CH-B.</p>													
<p>Step 1-4</p>	<p>When the CH-B level is high, perform Step 1-2 on CH-B.</p>													

<p>Step 2</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: Y-R, B</li><li>• Supply a multi burst signal to the COMPONENT 2 IN connector.</li><li>• Insert the BCT-20M cassette tape.</li><li>• MODE: REC/PB</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li><li>• DT SELECT sw: OFF</li></ul>	<p>COMPONENT 2 R-Y, B-Y OUT</p>  <p>Observe the level of the waveform in the moire center.</p> <table border="1"><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>8T bar</td><td>100% (Ref.)</td></tr><tr><td>0.2MHz</td><td>100 ± 4%</td></tr><tr><td>0.5MHz</td><td>100 ± 4%</td></tr><tr><td>1.0MHz</td><td>100 ± 4%</td></tr><tr><td>1.5MHz</td><td>98 ± 4%</td></tr><tr><td>2.0MHz</td><td>75% or more</td></tr></tbody></table> <ul style="list-style-type: none"><li>• Check that both the values in R-Y and B-Y satisfy the specification.</li><li>• When the specification is not satisfied, perform the following steps. However, step 4 in Sec. 12-4-4 should be also performed.</li></ul>	Freq.	Level	8T bar	100% (Ref.)	0.2MHz	100 ± 4%	0.5MHz	100 ± 4%	1.0MHz	100 ± 4%	1.5MHz	98 ± 4%	2.0MHz	75% or more	
Freq.	Level															
8T bar	100% (Ref.)															
0.2MHz	100 ± 4%															
0.5MHz	100 ± 4%															
1.0MHz	100 ± 4%															
1.5MHz	98 ± 4%															
2.0MHz	75% or more															
<p>Step 2-1</p>	<p>When the CH-A level is low, perform Step 2 and 4 in Sec. 12-4-4, and raise the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-2 and repeat the above steps.</p>															
<p>Step 2-2</p>	<p>When the CH-A level is high, perform Step 2 and 4 in Sec. 12-4-4, and lower the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-2 and repeat the above steps.</p>															
<p>Step 2-3</p>	<p>When the CH-B level is low, perform Step 2-1 on CH-B.</p>															
<p>Step 2-4</p>	<p>When the CH-B level is high, perform Step 2-2 on CH-B.</p>															
<p>Step 3</p>	<ul style="list-style-type: none"><li>• Repeat Step 1 and 2 until the specification is satisfied.</li></ul>															

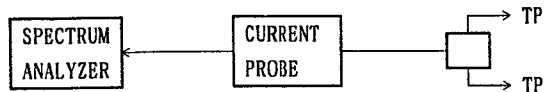


<p>Step 4</p> <ul style="list-style-type: none"><li>• Insert the BCT-20G cassette tape.</li><li>• MODE: REC/PB</li><li>• DT SELECT sw: OFF</li><li>• INPUT SELECT sw: Y-R, B</li><li>• Supply a multi burst signal to the COMPONENT 2 R-Y, B-Y IN connector.</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul>	<p>COMPONENT 2 R-Y, B-Y OUT</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>8T bar</td><td>100% (Ref.)</td></tr><tr><td>0.2MHz</td><td>100 ± 4%</td></tr><tr><td>0.5MHz</td><td>100 ± 4%</td></tr><tr><td>1.0MHz</td><td>90 ± 5%</td></tr><tr><td>1.5MHz</td><td>70% or more</td></tr></table> <ul style="list-style-type: none"><li>• Check that both the values in R-Y and B-Y satisfy the specification.</li><li>• When the specification is not satisfied, perform the following step.</li></ul>	Freq.	Level	8T bar	100% (Ref.)	0.2MHz	100 ± 4%	0.5MHz	100 ± 4%	1.0MHz	90 ± 5%	1.5MHz	70% or more	
Freq.	Level													
8T bar	100% (Ref.)													
0.2MHz	100 ± 4%													
0.5MHz	100 ± 4%													
1.0MHz	90 ± 5%													
1.5MHz	70% or more													
<p>Step 4-1</p>	<p>When the CH-A level is low, perform Step 2 and 4 in Sec. 12-4-4, and raise the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-3 and repeat the above steps.</p>													
<p>Step 4-2</p>	<p>When the CH-A level is high, perform Step 2 and 4 in Sec. 12-4-4, and lower the 10kHz level of CH-A. If the specification is not satisfied, readjust according to Sec. 12-4-3 and repeat the above steps.</p>													
<p>Step 4-3</p>	<p>When the CH-B level is low, perform Step 4-1 on CH-B.</p>													
<p>Step 4-4</p>	<p>When the CH-B level is high, perform Step 4-2 on CH-B.</p>													

## 12-4-6. Crosstalk Adjustment

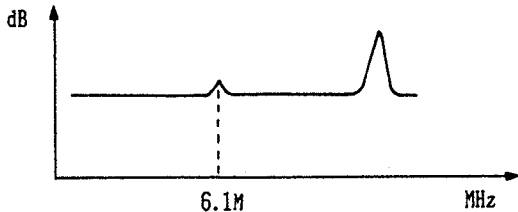
- Before performing this adjustment, perform Sec. 12-6-13 through 12-6-21.
- This adjustment is made after all RP-29P(Y), RP-29P(C) board adjustments are completed.

### 【Connection】



### 【Setting】

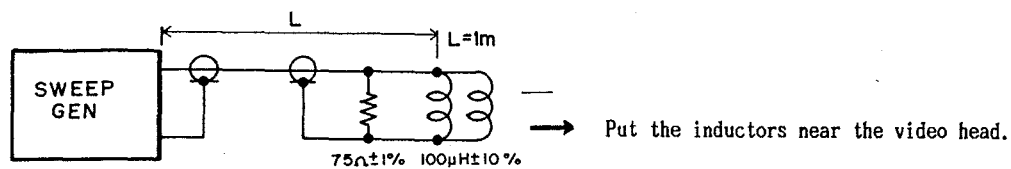
- Spectrum Analyzer
  - CENTER 5 MHz
  - SPAN 10 MHz
  - RBW 100 kHz
  - VBW 10 Hz
  - SWEEP TIME 5 sec

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• Remove SP1(C-3) and SP2(C-3) on the RP-29P(Y) board.</li> <li>• Using a shorting clips, short between TP3 and TP4, and TP5 and TP6.</li> <li>• Using a shorting clip, short between TP1 and E1.</li> <li>• Connect a current probe to TP3 and TP4 on the RP-29P(Y) board.</li> <li>• Insert the BCT-20M cassette.</li> <li>• MODE: REC</li> </ul>	TP3-TP4/RP-29P(Y)(C-3)(C-3)    Minimize the 6.1 MHz crosstalk	<ul style="list-style-type: none"> <li>• CH-A               <ul style="list-style-type: none"> <li>●RV13/RP-29P(Y)(E-4)</li> </ul> </li> </ul>
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Set as in Step 1 and connect a current probe to TP5 and TP6 on the RP-29P(Y) board.</li> <li>• After adjustment is completed, remove the shorting clips and insert SP1(C-3) and SP2(C-2).</li> </ul>	TP5-TP6/RP-29P(Y)(C-2)(C-2)  Minimize the 6.1MHz crosstalk	<ul style="list-style-type: none"> <li>• CH-B               <ul style="list-style-type: none"> <li>●RV14/RP-29P(Y)(E-2)</li> </ul> </li> </ul>

## 12-5. PA-68P BOARD ADJUSTMENT

### • Head coupling tool

To make this adjustment, stop the head drum rotation without a cassette tape and L-couple the sweep signal with the video head using two inductors (approx.  $100\ \mu\text{H} \times 2$ ).




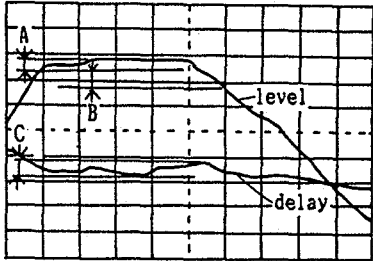

Sweep signal range: 1 to 20 MHz

### • Network Analyzer

MAG	0.5 dB
DLY	10 nsec
CF	10 MHz
SPAN	20 MHz
ST	4.0 sec
IRC	0 dB
RBW	10 kHz
VBW	10 kHz
DR	1 $\mu\text{sec}$

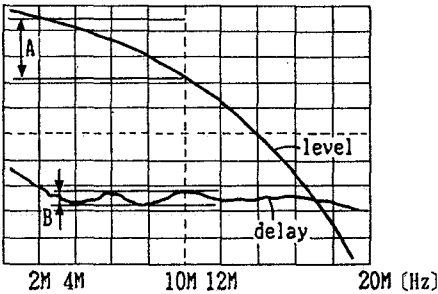
# 12-5-1. Y DT RF Frequency Response Adjustment

- Before performing this adjustment, perform Sec. 12-3-1 and 12-4-1.

machine conditions for adjustment	specifications	adjustments
<p>Step 1:</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• Close the head coupling tool in the DT Y A channel head.</li> <li>• MODE: EE</li> <li>• Connect the network analyzer Via an oscilloscope the CN110-6C on the DM-56P Board.</li> <li>• Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP3/DM-56P(C-4)</p>  <p><math>A = 0.7 \pm 0.1 \text{ Vp-p}</math> (6 MHz through 8 MHz portion)</p>	<p>CN110-6C/DM-56P</p>  <p><math>A \leq 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10MHz )</p> <p><math>C \leq 10 \text{ nsec}</math> (Delay difference between 3 MHz and 12MHz )</p> <p><math>B \leq 1 \text{ dB}</math> (Level difference between 2 MHz and 12MHz )</p>	<p>CH-A:</p> <p>RV1/PA-68P(upper drum)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Close the head coupling tool in the DT Y B channel head.</li> <li>• Connect the network analyzer Via an oscilloscope the CN110-10C on the DM-56P Board.</li> <li>• Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP3/DM-56P(C-4)</p>  <p><math>A = 0.7 \pm 0.1 \text{ Vp-p}</math> (6 MHz through 8 MHz portion)</p>	<p>CN110-10C/DM-56P(B-7)</p> <p><math>A \leq 0.5 \text{ dB}</math> (Level difference between 2 MHz and 10MHz )</p> <p><math>C \leq 10 \text{ nsec}</math> (Delay difference between 3 MHz and 12MHz )</p> <p><math>B \leq 1 \text{ dB}</math> (Level difference between 2 MHz and 12MHz )</p>	<p>CH-B:</p> <p>RV2/PA-68P(upper drum)</p>

## 12-5-2. C DT RF Frequency Response Adjustment

• Before performing this adjustment, perform Sec. 12-3-1 and 12-4-1.

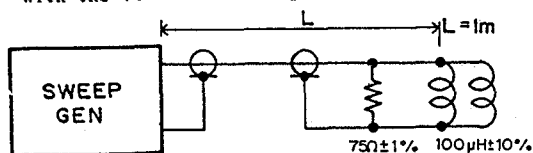
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• MODE: EE</li> <li>• Remove the DM-56P board from the unit, and insert the EX-151 extension board.</li> <li>• Set the network analyzer output to -6dB.</li> <li>• Connect the network analyzer Via an oscilloscope to CN3-15C on the EX-151 board.</li> <li>• Close the head coupling tool in the DT C A channel head.</li> </ul>	<p>CN3-15C/EX-151</p>  <p> <math>A \leq -4.0 \pm 0.5 \text{ dB}</math>            (Level difference between 2 MHz and 10MHz )  <math>B \leq 10 \text{ nsec}</math>            (Delay difference between 4 MHz and 12MHz )         </p>	<p>CH-A:            ●RV3/PA-68P(upper drum)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Connect the network analyzer Via an oscilloscope to CN3-19C on the EX-151 board.</li> <li>• Close the head coupling tool in the DT C B channel head.</li> <li>• After adjustment is completed, set the DM-56P board.</li> </ul>	<p>CN3-19C/EX-151</p> <p> <math>A \leq -4.0 \pm 0.5 \text{ dB}</math>            (Level difference between 2 MHz and 10MHz )  <math>B \leq 10 \text{ nsec}</math>            (Delay difference between 4 MHz and 12MHz )         </p>	<p>CH-B:            ●RV4/PA-68P(upper drum)</p>

## 12-6. DM-56P BOARD ADJUSTMENT

### 12-6-1. Y RF Phase Equalizer Adjustment

#### • Head coupling tool

To make this adjustment, stop the head drum rotation without a cassette tape and L-couple the sweep signal with the video head using two inductors (approx.  $100 \mu\text{H} \times 2$ ).



→ Put the inductors near the video head.

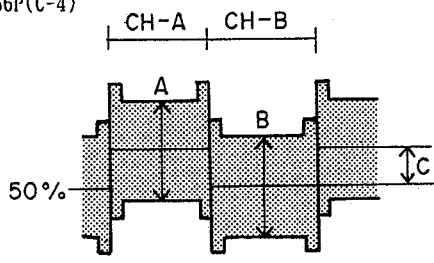
Sweep signal range: 1 to 20 MHz

#### • Network Analyzer

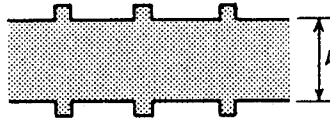
MAG	0.5 dB
DLY	10 nsec
CF	10 MHz
SPAN	20 MHz
ST	4.0 sec
IRG	0 dB
RBW	10 kHz
VBW	10 kHz
DR	1 $\mu$ sec

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP3/DM-56P(C-4)</p> <p><math>A = 0.7 \pm 0.1 \text{ Vp-p}</math> (6 MHz through 8 MHz portion)</p> <ul style="list-style-type: none"> <li>Connect the network analyzer via an oscilloscope to TP104/DM-56P, and measure the group delay.</li> <li>Close the head coupling tool in the R/P Y A channel head.</li> <li>MODE: EE</li> <li>SP101/DM-56P(A-2): SHORT</li> <li>SP102/DM-56P(A-2): OPEN</li> <li>After adjustment is completed, set SP101 and SP102 on the DM-56P board to the former position.</li> <li>SP101/DM-56P(A-2): OPEN</li> <li>SP102/DM-56P(A-2): SHORT</li> <li>Repeatedly turn the power on and off until the waveform appears.</li> </ul>	<p>TP104/DM-56P(C-1)</p> <p><math>A = 0 \pm 5 \text{ nsec}</math></p> <p>(Delay difference between 2MHz and 10MHz)</p>	<p>RV15/DM-56P(C-3)</p>

## 12-6-2. Y RF COS. Equalizer Input Level Adjustment

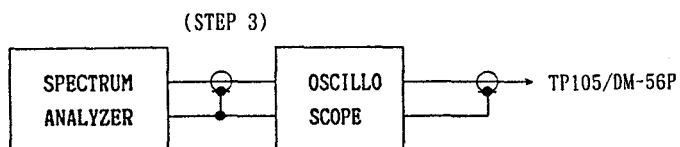
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Turn the TRACKING control so that the output waveform level is maximized.</li> </ul>	TP3/DM-56P(C-4)  Measured in the V center. $A = B = 0.7 \pm 0.05 \text{ Vp-p}$ $C = 0 \pm 0.04 \text{ Vdc}$	CH-A: ⌚RV3/DM-56P(B-5) CH-B: ⌚RV8/DM-56P(C-5) DC level: ⌚RV4/DM-56P(C-5)  TRIG(-): TP901/DM-56P(C-1)
<b>Step 2</b> <ul style="list-style-type: none"> <li>• DT SELECT sw: VAR</li> <li>• After adjustment is completed, set the DT SELECT sw to OFF.</li> </ul>	$A = B = 0.7 \pm 0.05 \text{ Vp-p}$	CH-A: ⌚RV2/DM-56P(B-6) CH-B: ⌚RV7/DM-56P(C-6)  TRIG(-): TP901/DM-56P(C-1)

## 12-6-3. Y RF AGC Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Turn the TRACKING control so that the output waveform level is maximized.</li> </ul>	TP101/DM-56P(A-2)  Measured in the V center. $A = 1.0 \pm 0.04 \text{ Vp-p}$	⌚RV101/DM-56P(A-2)  TRIG: TP901/DM-56P(C-1)

# 12-6-4. Y HF Input Level and Balance Adjustments

## 【Connection】

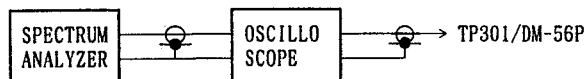


machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP104/DM-56P(C-1)</p> <p>Measured in the V center.</p> <p><math>A = 160 \pm 10 \text{ mVp-p}</math></p>	<p>RV103/DM-56P(B-2)</p> <p>TRIG: TP901/DM-56P(C-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-2A PS.</li> </ul>	<p>TP104/DM-56P(C-1)</p> <p>Measured in the V center.</p> <p><math>A = 160 \pm 10 \text{ mVp-p}</math></p>	<p>RV102/DM-56P(B-1)</p> <p>TRIG: TP901/DM-56P(C-1)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Connect the spectrum analyzer via oscilloscope to TP105 on the DM-56P board.</li> </ul>	<p>TP105/DM-56P(D-1)</p> <p>Minimize A level.</p> <p><math>B \geq 40 \text{ dB}</math></p>	<p>RV104/DM-56P(C-1)</p>



## 12-6-5. Y Limiter Balance Adjustment

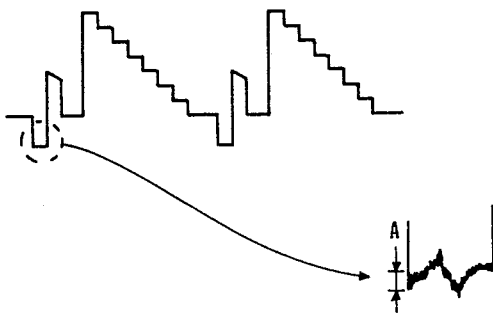
### 【Connection】



machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE SW: PB/EE</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• Connect the spectrum analyzer via oscilloscope to TP301 on the DM-56P board.</li> </ul>	<p>TP301/DM-56P(E-1)</p> <p><math>A \geq 38\text{dB}</math></p> <p>Secondary harmonics</p>	
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>(OXIDE)</p> <p><math>B \geq 38\text{dB}</math></p> <p>Secondary harmonics</p>	<p>RV301/DM-56P(D-1)</p>

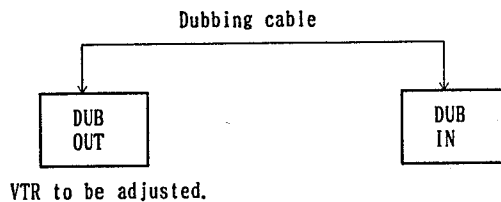


## 12-6-6. Y Demodulator Balance Adjustment

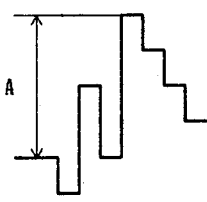
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: STOP</li> <li>• Insert the BCT-20G cassette tape.</li> </ul>	<p>TP402/DM-56P(E-6)</p>  <p>Minimize the carrier leak. Measurement should be made in the noise peak level. <math>A \leq 35 \text{ mVp-p}</math></p>	<p>RV302/DM-56P(E-1)</p> <p>TRIG: TP401/DM-56P(E-6)</p>

## 12-6-7. Y DUB OUT Level Adjustment

### 【Connection】

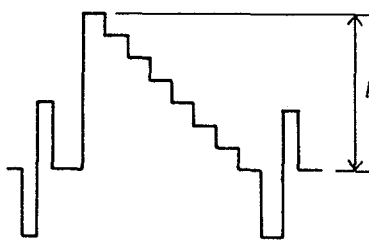


Connect using a dubbing cable as illustrated.

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: CTDM</li> <li>• Connect the DUB OUT and DUB IN connectors using a dubbing cable.</li> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP408/DM-56P(D-7)</p>  <p><math>A = 0.7 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV305/DM-56P(D-5)</p> <p>TRIG: TP408/DM-56P(D-7)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a color-bars signal on alignment tape CR5-2A PS.</li> </ul>	<p><math>A = 0.7 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV304/DM-56P(D-4)</p> <p>TRIG: TP408/DM-56P(D-7)</p>

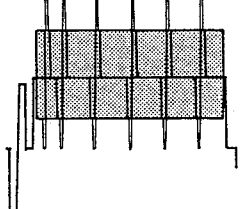

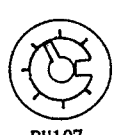
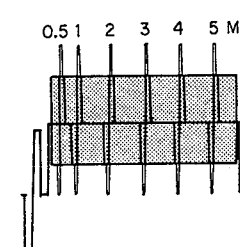
### 12-6-8. Y Demodulator Output Level Adjustment

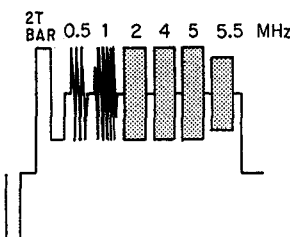
• Before perform this adjustment, the Y DUB OUT Level Adjustment (Section 12-6-7) should be completed.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP402/DM-56P(E-6)</p>  <p><math>A = 0.7 \pm 0.01 \text{ V}_{p-p}</math></p>	<p>RV401/DM-56P(E-6)</p> <p>TRIG: TP402/DM-56P(E-6)</p>



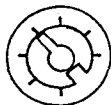
# 12-6-9. Y Video Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments														
<p>Step 1</p> <ul style="list-style-type: none"><li>• INPUT SELECT sw: CTDM</li><li>• Supply a 60% H. sweep signal to the DUB/COMPONENT 1 IN connector.</li></ul>	<p>TP401/DM-56P(E-6)</p> <p>0.5 1 2 3 4 5 MHz</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 3 %</td></tr><tr><td>2.0MHz</td><td>100 ± 3 %</td></tr><tr><td>3.0MHz</td><td>100 ± 3 %</td></tr><tr><td>4.0MHz</td><td>100 ± 3 %</td></tr><tr><td>5.0MHz</td><td>98 ± 5 %</td></tr></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1.0MHz	100 ± 3 %	2.0MHz	100 ± 3 %	3.0MHz	100 ± 3 %	4.0MHz	100 ± 3 %	5.0MHz	98 ± 5 %	<p>●CV347(C347)/DM-56P(D-5)</p> <p>TRIG: INT</p>
Freq.	Level															
0.5MHz	100 % (Ref.)															
1.0MHz	100 ± 3 %															
2.0MHz	100 ± 3 %															
3.0MHz	100 ± 3 %															
4.0MHz	100 ± 3 %															
5.0MHz	98 ± 5 %															
<p>Step 2</p> <ul style="list-style-type: none"><li>• Play back a 60% H. sweep (CTDM) signal on alignment tape CR5-1B PS.</li><li>• DT SELECT sw: OFF</li><li>• Set RV107 and RV106 as follows:</li></ul> <div></div> <p>RV107RV106</p> <ul style="list-style-type: none"><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul>	<p>TP401/DM-56P(E-6)</p> <p>0.5 1 2 3 4 5 MHz</p>  <p>Observe the level of the waveform in the moire center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 4 %</td></tr><tr><td>2.0MHz</td><td>100 ± 4 %</td></tr><tr><td>3.0MHz</td><td>100 ± 4 %</td></tr><tr><td>4.0MHz</td><td>100 ± 4 %</td></tr><tr><td>5.0MHz</td><td>98 ± 4 %</td></tr></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1.0MHz	100 ± 4 %	2.0MHz	100 ± 4 %	3.0MHz	100 ± 4 %	4.0MHz	100 ± 4 %	5.0MHz	98 ± 4 %	<p>CH-A: ●RV1/EQ-26/DM-56P(B-5)</p> <p>CH-B: ●RV2/EQ-26/DM-56P(B-5)</p> <p>TRIG: INT</p>
Freq.	Level															
0.5MHz	100 % (Ref.)															
1.0MHz	100 ± 4 %															
2.0MHz	100 ± 4 %															
3.0MHz	100 ± 4 %															
4.0MHz	100 ± 4 %															
5.0MHz	98 ± 4 %															

<p>Step 3</p> <ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul> <p>• After adjustment is completed, set DT SELECT switch to OFF.</p>	<p>TP401/DM-56P(E-6)</p> <p>Observe the level of the waveform in the moire center.</p> <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1.0MHz</td><td>100 ± 4 %</td></tr><tr><td>2.0MHz</td><td>100 ± 4 %</td></tr><tr><td>3.0MHz</td><td>100 ± 4 %</td></tr><tr><td>4.0MHz</td><td>100 ± 4 %</td></tr><tr><td>5.0MHz</td><td>100 ± 4 %</td></tr></tbody></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1.0MHz	100 ± 4 %	2.0MHz	100 ± 4 %	3.0MHz	100 ± 4 %	4.0MHz	100 ± 4 %	5.0MHz	100 ± 4 %	<p>CH-A: ●RV3/EQ-26/DM-56P(B-5)</p> <p>CH-B: ●RV4/EQ-26/DM-56P(B-5)</p> <p>TRIG: INT</p>		
Freq.	Level																	
0.5MHz	100 % (Ref.)																	
1.0MHz	100 ± 4 %																	
2.0MHz	100 ± 4 %																	
3.0MHz	100 ± 4 %																	
4.0MHz	100 ± 4 %																	
5.0MHz	100 ± 4 %																	
<p>Step 4</p> <ul style="list-style-type: none"><li>• Play back a multi burst signal on alignment tape CR5-1B PS.</li><li>• DT SELECT sw: OFF</li></ul>	<p>COMPONENT 2 Y OUT</p>  <p>Observe the level of the waveform in the moire center.</p> <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2T bar</td><td>100 % (Ref.)</td></tr><tr><td>0.5MHz</td><td>100 ± 4 %</td></tr><tr><td>1.0MHz</td><td>100 ± 4 %</td></tr><tr><td>2.0MHz</td><td>100 ± 4 %</td></tr><tr><td>4.0MHz</td><td>100 ± 4 %</td></tr><tr><td>5.0MHz</td><td>98 ± 6 %</td></tr><tr><td>5.5MHz</td><td>75 % or more</td></tr></tbody></table>	Freq.	Level	2T bar	100 % (Ref.)	0.5MHz	100 ± 4 %	1.0MHz	100 ± 4 %	2.0MHz	100 ± 4 %	4.0MHz	100 ± 4 %	5.0MHz	98 ± 6 %	5.5MHz	75 % or more	<p>●RV250/TBC-12P(B-1)</p> <p>TRIG: INT</p>
Freq.	Level																	
2T bar	100 % (Ref.)																	
0.5MHz	100 ± 4 %																	
1.0MHz	100 ± 4 %																	
2.0MHz	100 ± 4 %																	
4.0MHz	100 ± 4 %																	
5.0MHz	98 ± 6 %																	
5.5MHz	75 % or more																	

### Step 5

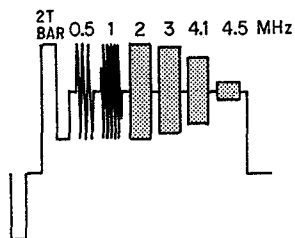
- Play back a multi burst signal on alignment tape CR5-2A PS.
- DT SELECT sw: OFF
- Set RV105 as follows:



RV105

- Push FIELD SELECT 1 + 3 on the WFM (For CH-A).
- Push FIELD SELECT 2 + 4 on the WFM (For CH-B).

### COMPONENT 2 Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
2T bar	100 % (Ref.)
0.5MHz	100 ± 4 %
1.0MHz	100 ± 4 %
2.0MHz	98 ± 5 %
3.0MHz	90 ± 5 %
4.1MHz	60 % or more
4.5MHz	—

CH-A:

RV5/EQ-26/DM-56P(B-5)

CH-B:

RV6/EQ-26/DM-56P(B-5)

TRIG: INT

### Step 6

- Play back a multi burst signal on alignment tape CR5-2A PS.
- DT SELECT sw: VAR
- Push FIELD SELECT 1 + 3 on the WFM (For CH-A).
- Push FIELD SELECT 2 + 4 on the WFM (For CH-B).

- After adjustment is completed, set DT SELECT switch to OFF.

### COMPONENT 2 Y OUT

Observe the level of the waveform in the moire center.

Freq.	Level
2T bar	100 % (Ref.)
0.5MHz	100 ± 4 %
1.0MHz	100 ± 4 %
2.0MHz	98 ± 5 %
3.0MHz	90 ± 5 %
4.1MHz	60 % or more
4.5MHz	—

CH-A:

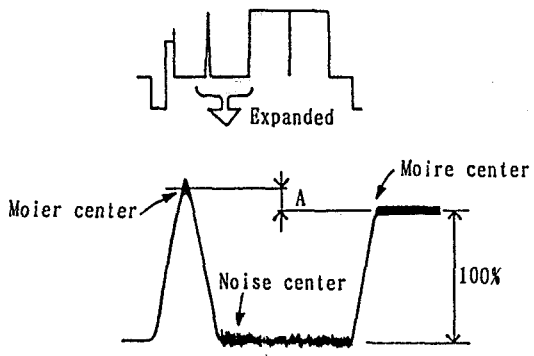
RV7/EQ-26/DM-56P(B-5)

CH-B:

RV8/EQ-26/DM-56P(B-5)

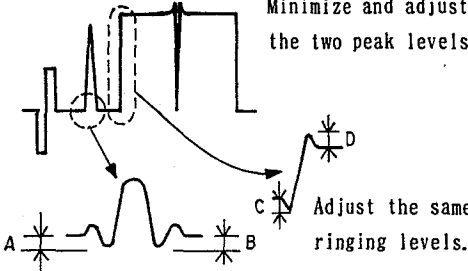
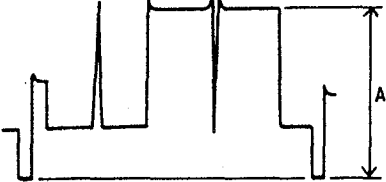
TRIG: INT

# 12-6-10. Y HF Gain Adjustment

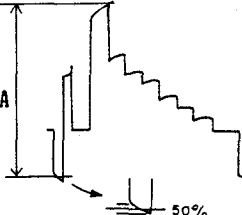
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar (CTDM) signal on alignment tape CR5-1B PS.</li> <li>• DT SELECT sw: OFF</li> <li>• FIELD SELECT/WFM: OFF</li> </ul>	<p>TP402/DM-56P(B-6)</p>  <p><math>A = + 0 \pm \frac{1}{2} \%</math></p> <p>Higher pulse is assumed to be pulse-signed.</p>	<p>RV106/DM-56P(C-1)</p> <p>TRIG: INT</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar (CTDM) signal on alignment tape CR5-1B PS.</li> <li>• DT SELECT sw: VAR</li> <li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A)</li> <li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B)</li> <li>• After adjustment is completed, set DT SELECT switch to OFF.</li> </ul>	<p>TP402/DM-56P(E-6)</p> <p><math>A = + 1 \pm \frac{1}{2} \%</math></p> <p>Higher pulse is assumed to be pulse-signed.</p>	<p>CH-A: RV1/DM-56P(B-7)</p> <p>CH-B: RV6/DM-56P(C-7)</p> <p>TRIG: INT</p>

• After this adjustment is completed, readjust Section 12-6-9.

# 12-6-11. Y DT BIDIREX Output Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>DT SELECT sw : VAR</li> <li>S901/DM-56P: ON</li> <li>Play back a pulse &amp; Bar signal on the composite self-REC tape and put the unit into the STILL mode.</li> </ul>	<p>TP402/DM-56P(E-6)</p>  <p>Minimize and adjust the two peak levels.</p> <p>Adjust the same ringing levels.</p> <p>Minimize the ringing.  <math>A = B \leq 80 \text{ mV}</math>  <math>C = D</math></p>	<ul style="list-style-type: none"> <li>RV306/DM-56P(E-5)</li> <li>RV307/DM-56P(E-5)</li> </ul> <p>Adjust alternately.</p> <p>TRIG: INT</p>
<ul style="list-style-type: none"> <li>DT SELECT sw : VAR</li> <li>S901/DM-56P: ON</li> <li>Play back a pulse &amp; Bar signal on the composite self-REC tape and put the unit into the STILL mode.</li> <li>After adjustment is completed, set DT SELECT switch and S901 on the DM-56P board to OFF.</li> </ul>	<p>TP402/DM-56P(E-6)</p>  <p><math>A = 0.7 \pm 0.04 \text{ Vp-p}</math></p>	<ul style="list-style-type: none"> <li>RV308/DM-56P(F-5)</li> </ul> <p>TRIG: INT</p>

# 12-6-12. Y FF Level Adjustment

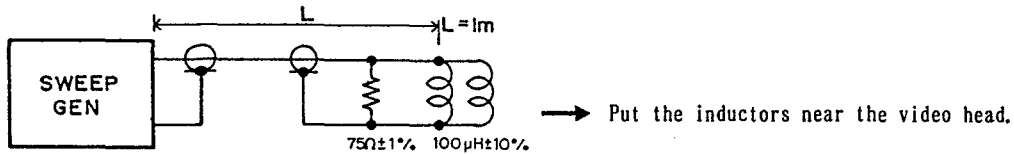
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> <li>MODE: ×15 SEARCH</li> </ul>	<p>TP401/DM-56P(E-6)</p>  <p><math>A = 1.5 \pm 0.04 \text{ Vp-p}</math></p>	<ul style="list-style-type: none"> <li>RV303/DM-56P(E-4)</li> </ul> <p>TRIG: TP401/DM-56P(E-6)</p>



### 12-6-13. C R F Phase Equalizer Adjustment

#### • Head coupling tool


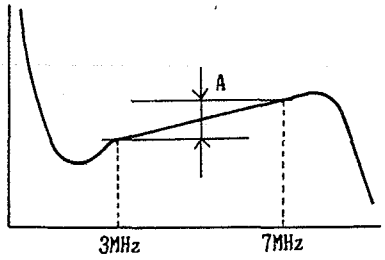
To make this adjustment, stop the head drum rotation without a cassette tape and L-couple the sweep signal with the video head using two inductors (approx.  $100 \mu\text{H} \times 2$ ).



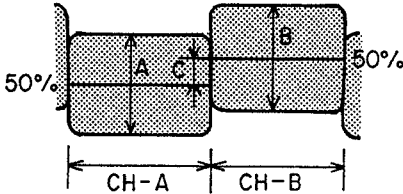
Sweep signal range: 1 to 20 MHz

#### • Network Analyzer


MAG 0.5 dB  
 DLY 10 nsec  
 CF 5 MHz  
 SPAN 10 MHz  
 ST 4.0 sec  
 IRG 0 dB  
 RBW 10 kHz  
 VBW 10 kHz  
 DR 1  $\mu$  sec

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Close the head coupling tool in the R/P C A channel head.</li> <li>• Adjust OUTPUT LEVEL of the network analyzer.</li> </ul> <p>TP505/DM-56P(H-4)</p>  <p><math>A = 0.6 \pm 0.1 \text{ Vp-p}</math>              (6 MHz through 8 MHz portion)</p> <ul style="list-style-type: none"> <li>• Connect the network analyzer via an oscilloscope to TP604/DM-56P, and adjust the group delay.</li> <li>• MODE: EE</li> <li>• Repeatedly turn the power on and off until the waveform appears.</li> </ul>	<p>TP604/DM-56P(H-1)</p>  <p><math>A = 10 \pm 10 \text{ nsec}</math></p> <p>(Delay difference between 3MHz and 7MHz.)</p>	<p>RV1/DUS-269 on the DM-56P(G-2)</p>

# 12-6-14. C RF COS. Equalizer Input Level Adjustment

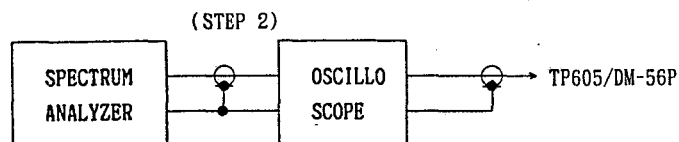
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>DT SELECT sw: OFF</li> <li>Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>Turn the TRACKING control so that the output waveform level is maximized.</li> </ul>	<p>TP505/DM-56P(H-4)</p>  <p>Measured in the V center.</p> <p><math>A = B = 0.6 \pm 0.05 \text{ Vp-p}</math>  <math>C = 0 \pm 0.04 \text{ Vdc}</math></p>	<p>CH-A:  RV502/DM-56P(G-5)</p> <p>CH-B:  RV505/DM-56P(H-5)</p> <p>DC LEVEL:  RV503/DM-56P(G-5)</p> <p>TRIG(-): TP902/DM-56P(F-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>DT SELECT sw: VAR</li> </ul> <p>• After adjustment is completed, set the DT SELECT sw to OFF.</p>	<p><math>A = B = 0.6 \pm 0.05 \text{ Vp-p}</math></p>	<p>CH-A:  RV501/DM-56P(G-6)</p> <p>CH-B:  RV504/DM-56P(H-6)</p> <p>TRIG(-): TP902/DM-56P(F-1)</p>

# 12-6-15. C RF AGC Output Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>Turn the TRACKING control so that the output waveform level is maximized.</li> </ul>	<p>TP508/DM-56P(F-1)</p>  <p>Measured in the V center.</p> <p><math>A = 1.0 \pm 0.04 \text{ Vp-p}</math></p>	<p>RV512/DM-56P(F-1)</p> <p>TRIG: TP902/DM-56P(F-1)</p>

# 12-6-16. C Input Level and HF Balance Adjustments

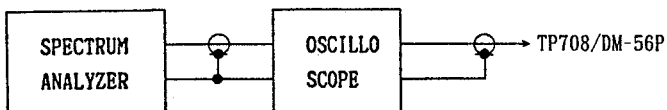
## 【Connection】



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-2A PS.</li> </ul>	<p>TP604/DM-56P(H-1)</p> <p>Measured in the V center.  <math>A = 300 \pm 20 \text{ mVp-p}</math></p>	<p>RV606/DM-56P(G-1)</p> <p>TRIG: TP902/DM-56P(F-1)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Connect the spectrum analyzer via oscilloscope to TP605 on the DM-56P board.</li> </ul>	<p>TP605/DM-56P(J-1)</p> <p>Minimize A level.  <math>B \geq 40 \text{ dB}</math></p>	<p>RV605/DM-56P(H-1)</p>

# 12-6-17. C Limiter Balance Adjustment

## 【Connection】



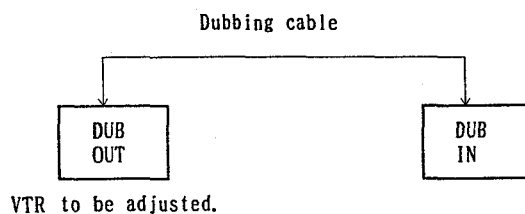
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a 50/50/50 flat field signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• Connect the spectrum analyzer via oscilloscope to TP708 on the DM-56P board.</li> </ul>	<b>TP708/DM-56P(H-2)</b> (METAL) <div style="text-align: center;"> <p><math>A \geq 38\text{dB}</math></p> </div>	<b>RV701/DM-56P(G-1)</b>
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<b>(OXIDE)</b> <div style="text-align: center;"> <p><math>B \geq 38\text{dB}</math></p> </div>	

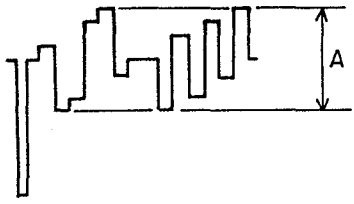
# 12-6-18. C Demodulator Balance Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB • PB/EE sw: PB/EE</li> <li>• Supply a color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: STOP</li> <li>• Insert the BCT-20G cassette tape.</li> </ul>	<b>TP801/DM-56P(J-6)</b> <div style="text-align: center;"> <p>Minimize the carrier leak.</p> <p><math>A \leq 30\text{ mVp-p}</math></p> <p>Measurement should be made in the noise peak level.</p> </div>	<b>RV702/DM-56P(J-1)</b>  TRIG: TP801/DM-56P(J-6)

# 12-6-19. C DUB OUT Level Adjustment

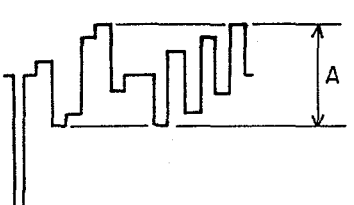
## 【Connection】



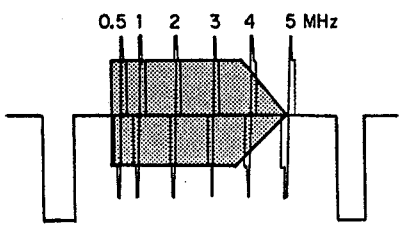
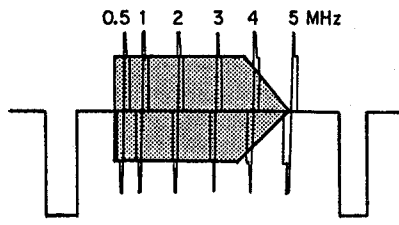
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• Connect DUB OUT and DUB IN connectors using a dubbing cable.</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	TP804/DM-56P(J-6)  $A = 0.78 \pm 0.01 \text{ Vp-p}$	●RV703/DM-56P(J-3)  TRIG: TP804/DM-56P(J-6)
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Play back a color-bars signal on alignment tape CR5-2A PS.</li> <li>• After adjustment is completed, remove the dubbing cable.</li> </ul>	$A = 0.59 \pm 0.01 \text{ Vp-p}$	●RV704/DM-56P(J-3)  TRIG: TP804/DM-56P(J-6)

# 12-6-20. C Demodulator Output Level Adjustment

\* Before perform this adjustment, the C DUB OUT Level Adjustment (Section 12-6-19) should be completed.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	TP802/DM-56P(H-5)  $A = 0.93 \pm 0.01 \text{ Vp-p}$	●RV802/DM-56P(J-6)  TRIG: TP802/DM-56P(H-5)

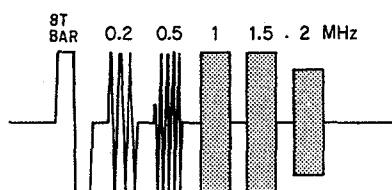
# 12-6-21. C Video Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments												
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a 60% H. sweep (CTDM) signal on alignment tape CR5-1B PS.</li><li>• DT SELECT sw: OFF</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul>	<p>TP801/DM-56P(J-6)</p>  <p>Observe the level of the waveform in the moiré center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>98 ± 4 %</td></tr><tr><td>4 MHz</td><td>75% or more</td></tr></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	98 ± 4 %	4 MHz	75% or more	<p>CH-A: RV1/EQ-28/DM-56P(H-4)</p> <p>CH-B: RV2/EQ-28/DM-56P(H-4)</p> <p>TRIG: TP401/DM-56P(E-6)</p>
Freq.	Level													
0.5MHz	100 % (Ref.)													
1 MHz	100 ± 4 %													
2 MHz	100 ± 4 %													
3 MHz	98 ± 4 %													
4 MHz	75% or more													
<p>Step 2</p> <ul style="list-style-type: none"><li>• DT SELECT sw: VAR</li><li>• Push FIELD SELECT 1 + 3 on the WFM (For CH-A).</li><li>• Push FIELD SELECT 2 + 4 on the WFM (For CH-B).</li></ul> <p>• After adjustment is completed, set the DT SELECT switch to OFF.</p>	<p>TP801/DM-56P(J-6)</p>  <p>Observe the level of the waveform in the moiré center.</p> <table><tr><th>Freq.</th><th>Level</th></tr><tr><td>0.5MHz</td><td>100 % (Ref.)</td></tr><tr><td>1 MHz</td><td>100 ± 4 %</td></tr><tr><td>2 MHz</td><td>100 ± 4 %</td></tr><tr><td>3 MHz</td><td>98 ± 4 %</td></tr><tr><td>4 MHz</td><td>75% or more</td></tr></table>	Freq.	Level	0.5MHz	100 % (Ref.)	1 MHz	100 ± 4 %	2 MHz	100 ± 4 %	3 MHz	98 ± 4 %	4 MHz	75% or more	<p>CH-A: RV3/EQ-28/DM-56P(G-4)</p> <p>CH-B: RV4/EQ-28/DM-56P(G-3)</p> <p>TRIG: TP401/DM-56P(E-6)</p>
Freq.	Level													
0.5MHz	100 % (Ref.)													
1 MHz	100 ± 4 %													
2 MHz	100 ± 4 %													
3 MHz	98 ± 4 %													
4 MHz	75% or more													

### Step 3

- Play back a multi burst signal on alignment tape CR5-1B PS.
- DT SELECT sw: OFF

### COMPONENT 2 R-Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
8T bar	100 % (Ref.)
0.2MHz	100 $\pm$ 4 %
0.5MHz	100 $\pm$ 4 %
1.0MHz	100 $\pm$ 4 %
1.5MHz	100 $\pm$ 4 %
2.0MHz	73% or more

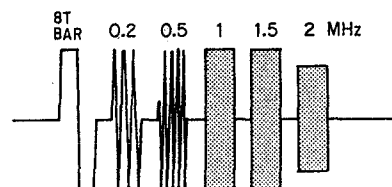
CV103/TBC-12P(B-2)

TRIG: COMPONENT 2 Y OUT

### Step 4

- Play back a multi burst signal on alignment tape CR5-1B PS.
- DT SELECT sw: OFF

### COMPONENT 2 B-Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
8T bar	100 % (Ref.)
0.2MHz	100 $\pm$ 4 %
0.5MHz	100 $\pm$ 4 %
1.0MHz	100 $\pm$ 4 %
1.5MHz	100 $\pm$ 4 %
2.0MHz	73% or more

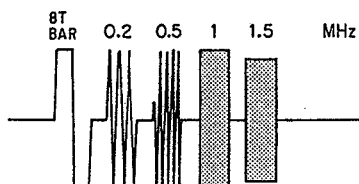
CV102/TBC-12P(A-2)

TRIG: COMPONENT 2 Y OUT

# Step 5

- DT SELECT sw: OFF
- Play back a multi burst signal on alignment tape CR5-2A PS.
- Push FIELD SELECT 1 + 3 on the WFM (For CH-A).
- Push FIELD SELECT 2 + 4 on the WFM (For CH-B).

## COMPONENT 2 R-Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
8T bar	100 % (Ref. )
0.2MHz	100 $\pm$ 4 %
0.5MHz	100 $\pm$ 4 %
1.0MHz	90 $\pm$ 5 %
1.5MHz	70% or more

CH-A:

RV5/EQ-28/DM-56P(H-4)

CH-B:

RV6/EQ-28/DM-56P(G-4)

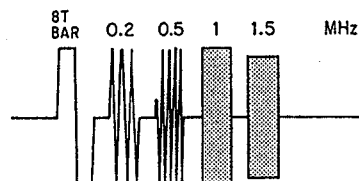
TRIG: COMPONENT 2 Y OUT

# Step 6

- DT SELECT sw: VAR
- Play back a multi burst signal on alignment tape CR5-2A PS.
- Push FIELD SELECT 1 + 3 on the WFM (For CH-A).
- Push FIELD SELECT 2 + 4 on the WFM (For CH-B).

- After adjustment is completed, set the DT SELECT switch to OFF.

## COMPONENT 2 R-Y OUT



Observe the level of the waveform in the moire center.

Freq.	Level
8T bar	100 % (Ref. )
0.2MHz	100 $\pm$ 4 %
0.5MHz	100 $\pm$ 4 %
1.0MHz	90 $\pm$ 5 %
1.5MHz	70% or more

CH-A:

RV7/EQ-28/DM-56P(G-4)

CH-B:

RV8/EQ-28/DM-56P(G-4)

TRIG: COMPONENT 2 Y OUT



# 12-6-22. Y Noise Canceller Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a pulse &amp; bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: STOP</li> <li>• Insert a BCT-20G cassette.</li> </ul>	TP405/DM-56P(E-6) <div> </div> $A = B \pm 20 \text{ mV}$	RV405/DM-56P(F-6)  TRIG: INT

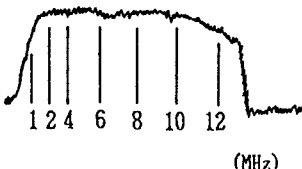
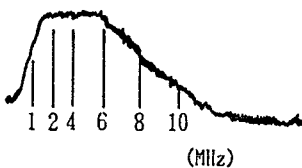
# 12-6-23. Y RF Envelope Adjustment

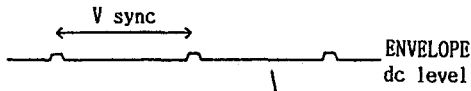
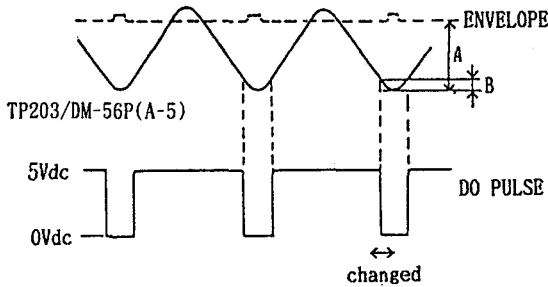
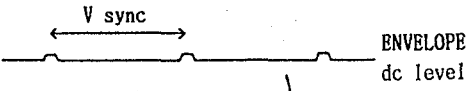
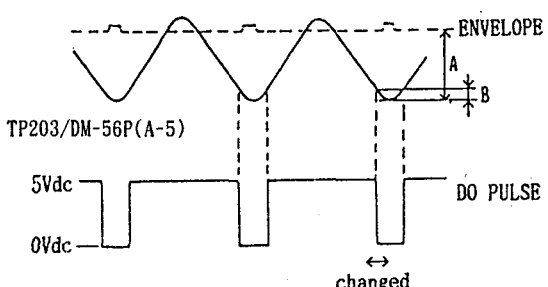
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Put the unit into the SEARCH STILL mode.</li> <li>• Put the unit into JOG mode, and turn search dial so that the output waveform is maximized.</li> </ul>	TP206/DM-56P(C-4) <div> </div> $A = 0.6 \pm 0.1 \text{ Vp-p}$	RV207/DM-56P(C-3)  TRIG: INT

# 12-6-24. RF Meter Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> <li>• Maximize the deflection of the RF meter pointer using a TRACKING control.</li> </ul>	VIDEO RF meter/front panel <div> </div> Set the pointer to 4.	RV206/DM-56P(A-6)

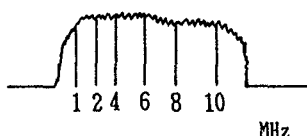
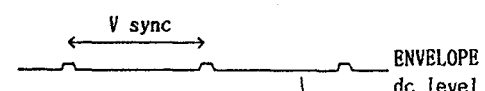
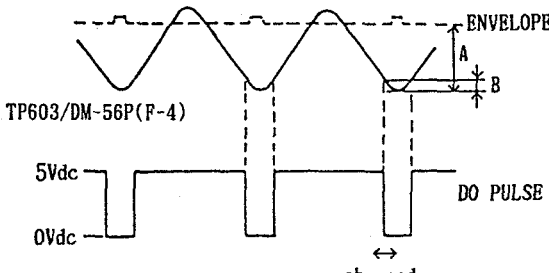
# 12-6-25. Y DOC Sensitivity Adjustment

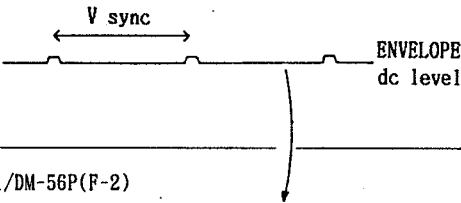
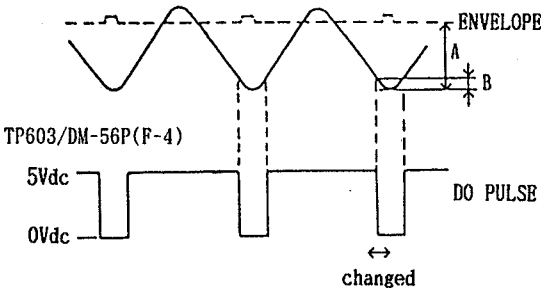
machine conditions for adjustment	specifications	adjustments																				
<p>Step 1</p> <ul style="list-style-type: none"><li>• Play back a RF sweep signal on alignment tape CR5-1B PS.</li><li>• S1/SV-83: ON</li><li>• S101-Bit4/SV-82: ON</li><li>• S201-Bit2/DT-13: ON</li><li>• Turn the TRACKING control so that the output waveform around 6 through 7 MHz is maximized.</li><li>• DT SELECT sw: OFF (Spec. A)</li><li>• DT SELECT sw: VAR (Spec. B)</li><li>• Adjust so that the specification is satisfied when the trigger of the oscilloscope is set to the negative side and the positive side.</li><li>• After adjustment is completed, return the above switches to OFF.</li></ul>	<p>TP202/DM-56P(A-4) (METAL)</p>  <p style="text-align: center;">(MHz)</p> <p>CH-A/CH-B</p> <table><tr><th rowspan="2">Freq.</th><th colspan="2">LEVEL</th></tr><tr><th>Spec. A</th><th>Spec. B</th></tr><tr><td>2 MHz</td><td>100 ± 1% %</td><td>100 ± 1% %</td></tr><tr><td>4 MHz</td><td>100 ± 1% %</td><td>100 ± 15 %</td></tr><tr><td>8 MHz</td><td>100 % (Ref.)</td><td>100 % (Ref.)</td></tr><tr><td>10 MHz</td><td>100 ± 1% %</td><td>100 ± 2% %</td></tr><tr><td>12 MHz</td><td>80 ± 20 %</td><td>60 ± 25 %</td></tr></table>	Freq.	LEVEL		Spec. A	Spec. B	2 MHz	100 ± 1% %	100 ± 1% %	4 MHz	100 ± 1% %	100 ± 15 %	8 MHz	100 % (Ref.)	100 % (Ref.)	10 MHz	100 ± 1% %	100 ± 2% %	12 MHz	80 ± 20 %	60 ± 25 %	<ul style="list-style-type: none"><li>●RV201/DM-56P(A-3) (Low range)</li><li>●RV202/DM-56P(A-3) (High range)</li></ul> <p>TRIG: TP901/DM-56P(C-1) (-): CH-A (+): CH-B</p>
Freq.	LEVEL																					
	Spec. A	Spec. B																				
2 MHz	100 ± 1% %	100 ± 1% %																				
4 MHz	100 ± 1% %	100 ± 15 %																				
8 MHz	100 % (Ref.)	100 % (Ref.)																				
10 MHz	100 ± 1% %	100 ± 2% %																				
12 MHz	80 ± 20 %	60 ± 25 %																				
<p>Step 2</p> <ul style="list-style-type: none"><li>• Close the OXIDE/METAL tape detection hole on the back side of the CR5-1B PS alignment tape with tape and play back the RF sweep signal.</li><li>• DT SELECT sw: OFF</li><li>• Adjust so that the specification is satisfied when the trigger of the oscilloscope is set to the negative side and the positive side.</li><li>• After adjustment is completed, remove the tape on the back side of the CR5-1B PS alignment tape.</li></ul>	<p>(OXIDE)</p>  <p style="text-align: center;">(MHz)</p> <table><tr><th>Freq.</th><th>LEVEL</th></tr><tr><td>2 MHz</td><td>—</td></tr><tr><td>4 MHz</td><td>90 ± 1% %</td></tr><tr><td>6 MHz</td><td>100% (Ref.)</td></tr><tr><td>8 MHz</td><td>100 ± 2% %</td></tr><tr><td>10 MHz</td><td>70 ± 1% %</td></tr></table>	Freq.	LEVEL	2 MHz	—	4 MHz	90 ± 1% %	6 MHz	100% (Ref.)	8 MHz	100 ± 2% %	10 MHz	70 ± 1% %	<ul style="list-style-type: none"><li>●CV1/DUS-288 on the DM-56P board.</li></ul> <p>TRIG: TP901/DM-56P(C-1) (-): CH-A (+): CH-B</p>								
Freq.	LEVEL																					
2 MHz	—																					
4 MHz	90 ± 1% %																					
6 MHz	100% (Ref.)																					
8 MHz	100 ± 2% %																					
10 MHz	70 ± 1% %																					

<p>Step 3</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-2A PS.</li> </ul>	<p>TP202/DM-56P(A-4)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 4</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw: PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP202/DM-56P(A-4)</p>  <p><math>B/A = 20 \pm 2 \%</math></p>	<p>RV203/DM-56P(A-4)</p> <p>TRIG: TP404/DM-56P(E-6)</p>
<p>Step 5</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP202/DM-56P(A-4)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 6</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw: PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP202/DM-56P(A-4)</p>  <p><math>B/A = 16 \pm 2 \%</math></p>	<p>RV204/DM-56P(B-5)</p> <p>TRIG: TP404/DM-56P(E-6)</p>

<p>Step 7</p> <ul style="list-style-type: none"> <li>• Check that no white noise appears near the guard band on a monitor.</li> </ul>		
<p>Step 8</p> <ul style="list-style-type: none"> <li>• Play back a 100% color-bars with dropout signal on alignment tape CR5-1B PS.</li> </ul>	<p>Check that the dropout portion is compensated on the monitor.</p>	
<p>Step 9</p> <ul style="list-style-type: none"> <li>• Play back a color-bars signal on alignment tape CR5-2A PS.</li> <li>• MODE: FWD ×24.</li> </ul>	<p>If the play back picture cannot recognize with color-bars signal, perform adjustment so that recognize with the color-bars signal.</p>	<p>●RV205/DM-56P(A-5)</p>

# 12-6-26. C DOC Sensitivity Adjustment

machine conditions for adjustment	specifications	adjustments																				
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a RF sweep signal on alignment tape CR5-1B PS.</li> <li>• S1/SV-83: ON</li> <li>• S201-Bit2/DT-13: ON</li> <li>• S101-Bit4/SV-82: ON</li> <li>• Turn the TRACKING control so that the output waveform is maximized.</li> <li>• DT SELECT sw: OFF (Spec. A)</li> <li>• DT SELECT sw: VAR (Spec. B)</li> <li>• Adjust so that the specification is satisfied when the trigger of the oscilloscope is set the negative side and the positive side.</li> <li>• After adjustment is completed, return the above switches to OFF.</li> </ul>	<p>TP602/DM-56P(F-3)</p>  <p>CH-A/CH-B</p> <table border="1"> <thead> <tr> <th rowspan="2">Freq.</th><th colspan="2">Level</th></tr> <tr> <th>Spec. A</th><th>Spec. B</th></tr> </thead> <tbody> <tr> <td>2 MHz</td><td>80 ± 20 %</td><td>80 ± 20 %</td></tr> <tr> <td>4 MHz</td><td>100 ± 10 %</td><td>100 ± 10 %</td></tr> <tr> <td>6 MHz</td><td>100 % (Ref.)</td><td>100 % (Ref.)</td></tr> <tr> <td>8 MHz</td><td>100 ± 20 %</td><td>95 ± 20 %</td></tr> <tr> <td>10 MHz</td><td>75 ± 20 %</td><td>75 ± 25 %</td></tr> </tbody> </table>	Freq.	Level		Spec. A	Spec. B	2 MHz	80 ± 20 %	80 ± 20 %	4 MHz	100 ± 10 %	100 ± 10 %	6 MHz	100 % (Ref.)	100 % (Ref.)	8 MHz	100 ± 20 %	95 ± 20 %	10 MHz	75 ± 20 %	75 ± 25 %	<ul style="list-style-type: none"> <li>●RV601/DM-56P(F-2) (Low range)</li> <li>●RV602/DM-56P(F-2) (High range)</li> </ul> <p>TRIG: TP901/DM-56P(C-1) (-): CH-A (+): CH-B</p>
Freq.	Level																					
	Spec. A	Spec. B																				
2 MHz	80 ± 20 %	80 ± 20 %																				
4 MHz	100 ± 10 %	100 ± 10 %																				
6 MHz	100 % (Ref.)	100 % (Ref.)																				
8 MHz	100 ± 20 %	95 ± 20 %																				
10 MHz	75 ± 20 %	75 ± 25 %																				
<p>Step 2</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• Play back a pulse &amp; bar signal on alignment tape CR5-2A PS.</li> </ul>	<p>TP602/DM-56P(F-3)</p> 	<p>Maximize the DC level using a TRACKING control.</p>																				
<p>Step 3</p> <ul style="list-style-type: none"> <li>• PB. PB/EE sw: PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP601/DM-56P(F-2)</p>  <p>B/A = 20 ± 2 % (B/A indicates the DO pulse detection level in the JOG STILL mode relative to the DC level at TP601 in the normal PB mode.)</p>	<ul style="list-style-type: none"> <li>●RV603/DM-56P(F-3)</li> </ul> <p>TRIG: TP902/DM-56P(F-1)</p>																				

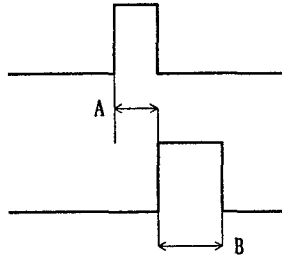
<p>Step 4</p> <ul style="list-style-type: none"> <li>• DT SELECT sw: OFF</li> <li>• Play back a flat field signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP602/DM-56P(F-3)</p> 	<p>Maximize the DC level using a TRACKING control.</p>
<p>Step 5</p> <ul style="list-style-type: none"> <li>• PB, PB/EE sw: PB/EE</li> <li>• MODE: JOG STILL</li> </ul>	<p>TP601/DM-56P(F-2)</p>  <p>TP603/DM-56P(F-4)</p> <p>5Vdc</p> <p>0Vdc</p> <p>DO PULSE</p> <p>changed</p> <p><math>B/A = 16 \pm 2 \%</math></p> <p>(B/A indicates the DO pulse detection level in the JOG STILL mode relative to the DC level at TP601 in the normal PB mode.)</p>	<p>RV604/DM-56P(G-3)</p>
<p>Step 6</p> <ul style="list-style-type: none"> <li>• Check that no white noise appears near the guard band on a monitor.</li> </ul>		
<p>Step 7</p> <ul style="list-style-type: none"> <li>• Play back a 100% color-bars with dropout signal on alignment tape CR5-1B PS.</li> </ul>	<p>Check that the dropout portion is compensated on the monitor.</p>	

## 12-6-27. REV×24 Over Modulation Adjustment

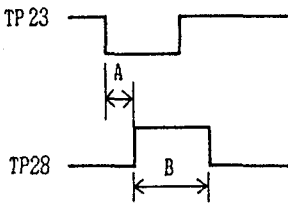
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a color-bars signal on alignment tapes CR5-1B PS and CR5-2A PS.</li> <li>• MODE: REV×24</li> </ul>	<p>If the play back picture cannot recognize with color-bars signal, perform adjustment so that recognize with the color-bars signal.</p>	<p>LV1/DM-56P(C-5)</p>

## 12-7. EN-48P BOARD ADJUSTMENT

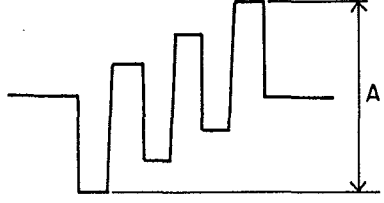
### 12-7-1. Clamp Pulse Position Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP29/EN-48P(C-1) TP30/EN-48P(D-1)</p>  <p><math>A = 0.8 \pm 0.1 \mu\text{sec}</math> <math>B = 1.0 \pm 0.1 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>●RV21/EN-48P(D-2)</li> <li>●RV22/EN-48P(D-1)</li> </ul>

### 12-7-2. Burst Gate Pulse Tentative Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> </ul>	<p>TP23/EN-48P(C-2) TP28/EN-48P(C-1)</p>  <p><math>A = 0.43 \pm 0.01 \mu\text{sec}</math> <math>B = 3.25 \pm 0.05 \mu\text{sec}</math></p>	<ul style="list-style-type: none"> <li>• Position ●RV27/EN-48P(D-2)</li> <li>• Width ●RV28/EN-48P(D-2)</li> </ul> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

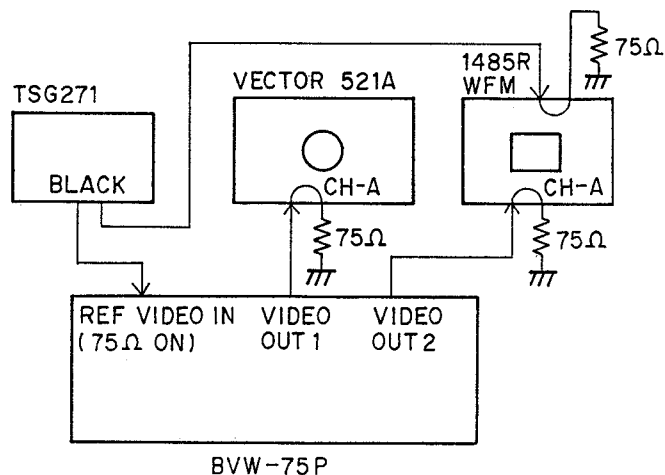
### 12-7-3. Chroma Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP3/EN-48P(D-5) (B-Y)</p>  <p><math>A = 0.575 \pm 0.02 V_{p-p}</math></p>	<ul style="list-style-type: none"> <li>●RV1/EN-48P(C-5)</li> </ul> <p>TRIG: TP3/EN-48P(D-5)</p>

\* After this adjustment is completed, make Sections 12-7-9 Component 2 R-Y/B-Y Level Adjustment and 12-7-10 DUB C OUT Level Adjustment.

# 12-7-4. COMPOSITE C OUT Level Adjustment

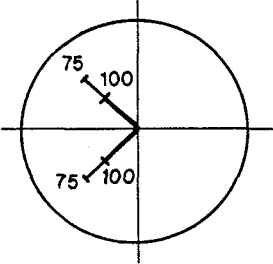
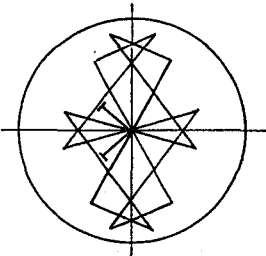

## 【Connection】



• Before perform this adjustment, perform Sec. 12-8-7.

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> <li>• S2/VO-18P(A-4): ON</li> <li>• RV350/EN-48P(B-2): mechanical center</li> </ul>	<b>VIDEO OUT 1 (Terminated in 75 ohms.)</b> <ul style="list-style-type: none"> <li>• Adjust the burst phase using the vector monitor's PHASE control and GAIN control.</li> </ul>	PHASE control/vector scope GAIN control/vector scope
<b>Step 2</b>	<b>VIDEO OUT 1 (Terminated in 75 ohms.)</b>	●RV501-EN-48P(B-3)
<b>Step 3</b>	<b>VIDEO OUT 2 (Terminated in 75 ohms.)</b> <p> <math>A = 300 \pm 5 \text{ mVp-p}</math>  <math>B = 885 \pm 5 \text{ mVp-p}</math> </p>	<ul style="list-style-type: none"> <li>• For A ●RV7/EN-48P(B-4)</li> <li>• For B ●RV4/EN-48P(A-4)</li> </ul>

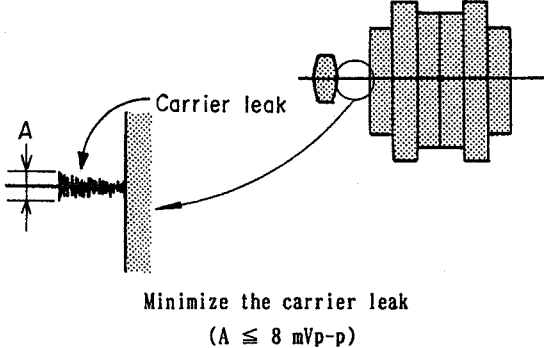
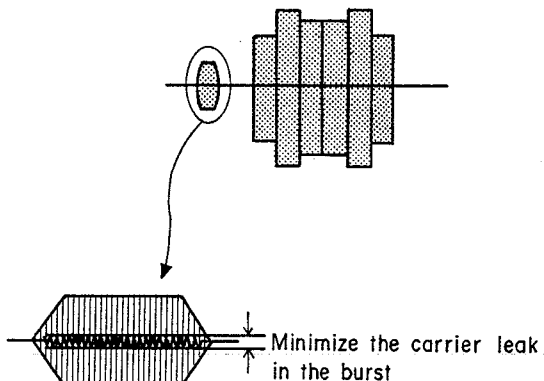


<p>Step 4</p>	<p>VIDEO OUT 1 (Terminated in 75 ohms) (Vectorscope)</p>  <p>• Adjustment the burst phase using the vector monitor' PHASE control.</p>	
<p>Step 5</p>	<p>VIDEO OUT 1 (Terminated in 75 ohms) (Vectorscope)</p>  <p>Adjust each dot to the center of .</p>	<p>●RV203/EN-48P(A-2) ●RV4/EN-48P(A-4) ●RV14/EN-48P(E-4)</p> <p>• Adjustment direction : RV4 : RV203 : RV14</p>

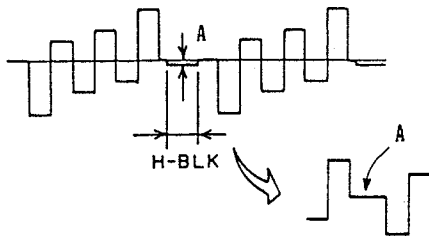
• After this adjustment is completed, make Sec. 12-8-8.



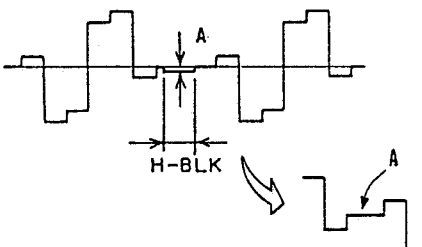
### 12-7-5. Carrier Leak Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• S2/VO-18P(A-4): ON</li> </ul>	<p>VIDEO OUT 2 (WFM)</p>  <p>Minimize the carrier leak (<math>A \leq 8 \text{ mVp-p}</math>)</p>	<ul style="list-style-type: none"> <li>●RV6/EN-48P(A-5)</li> <li>●RV2/EN-48P(A-5)</li> </ul> <p>TRIG: INT</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• After adjustment is completed, set S2 on the VO-18P board to OFF.</li> </ul>	<p>VIDEO OUT 2 (WFM)</p>  <p>Minimize the carrier leak in the burst</p>	<ul style="list-style-type: none"> <li>●RV502/EN-48P(A-3)</li> <li>●RV602/EN-48P(A-3)</li> </ul> <p>TRIG: INT</p>

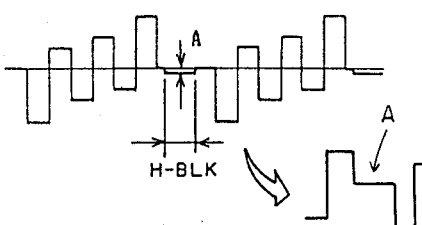
### 12-7-6. COMPONENT 2 B-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> <li>• For this adjustment, never extend the EN-48P board using an extension board.</li> </ul>	<p>COMPONENT 2, B-Y OUT</p>  <p>Minimize the blanking level in portion A. (No level difference)</p>	<ul style="list-style-type: none"> <li>●RV30/EN-48P(A-4)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>

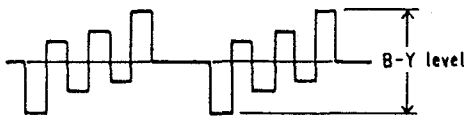
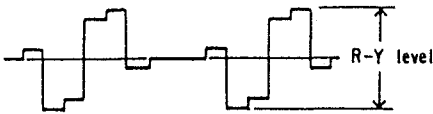
### 12-7-7. COMPONENT 2 R-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> <li>• For this adjustment, never extend the EN-48P board using an extension board.</li> </ul>	<p>COMPONENT 2, R-Y OUT</p>  <p>Minimize the blanking level in portion A. (No level difference)</p>	<p>RV40/EN-48P(A-4)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

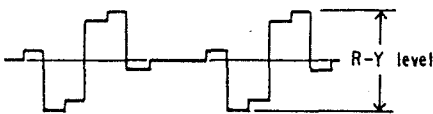
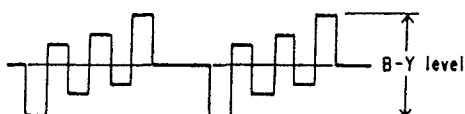
### 12-7-8. DUB B-Y Blanking Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> <li>• For this adjustment, never extend the EN-48P board using an extension board.</li> </ul>	<p>DUB/COMPONENT 1 B-Y OUT, pin 5</p>  <p>Minimize the blanking level in portion A. (No level difference)</p>	<p>RV31/EN-48P(A-4)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

# 12-7-9. COMPONENT 2 R-Y/B-Y OUT Level Adjustment

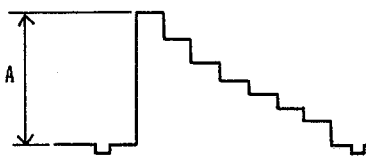
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>COMPONENT 2 B-Y OUT (Terminated in 75 ohms.)</p>  <p>B-Y level = <math>0.7 \pm 0.01</math> Vp-p</p>	<p>RV34/EN-48P(F-5)</p>
	<p>COMPONENT 2 R-Y OUT (Terminated in 75 ohms.)</p>  <p>R-Y level = <math>0.7 \pm 0.01</math> Vp-p</p>	<p>RV41/EN-48P(F-5)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

# 12-7-10. DUB C OUT Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>DUB/COMPONENT 1 R-Y OUT, pin 3 (Terminated in 75 ohms.)</p>  <p>R-Y level = <math>0.7 \pm 0.01</math> Vp-p</p>	<p>RV42/EN-48P(F-5)</p>
	<p>DUB/COMPONENT 1 B-Y OUT, pin 5 (Terminated in 75 ohms.)</p>  <p>B-Y level = <math>0.7 \pm 0.01</math> Vp-p</p>	<p>RV33/EN-48P(F-4)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

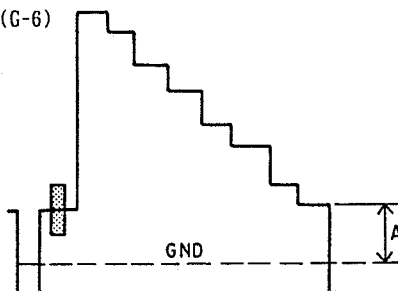
## 12-8. VO-18P BOARD ADJUSTMENT

### 12-8-1. Input Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP2/VO-18P(C-6)</p>  <p>Level difference between the pedestal level is not contained.</p> <p><math>A = 1.0 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV1/VO-18P(B-7)</p> <p>TRIG: TP2/VO-18P(C-6)</p>

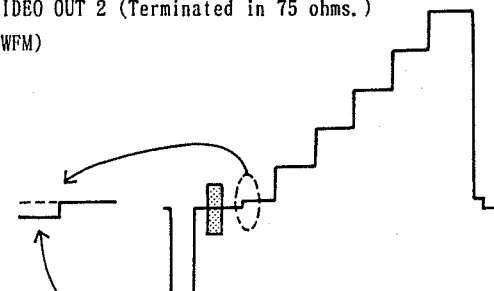
\* After this adjustment is completed, adjust Sections 12-8-6 Character Adjustment and 12-8-7 Video output level adjustment.

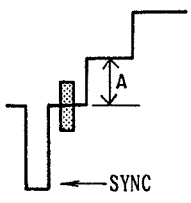
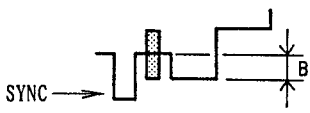
### 12-8-2. Y DC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• S1/EN-48P: ON</li> </ul> <p>• After adjustment is completed, set S1 to the former position.</p>	<p>TP6/VO-18P(G-6)</p>  <p><math>A = 0 \pm 0.01 \text{ Vdc.}</math></p>	<p>RV7/VO-18P(F-6)</p> <p>TRIG: TP6/VO-18P(G-6)</p>

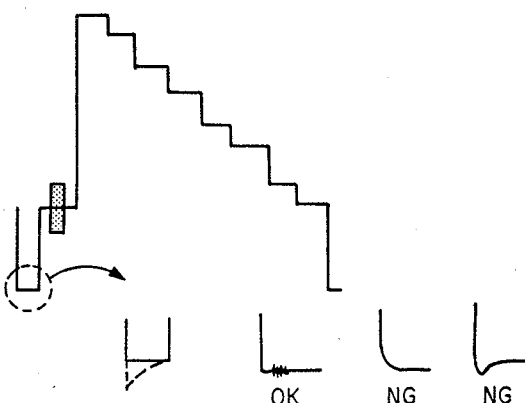
\* After this adjustment is completed, make Section 12-8-8 Character Pedestal Adjustment.

### 12-8-3. Black Level Adjustment

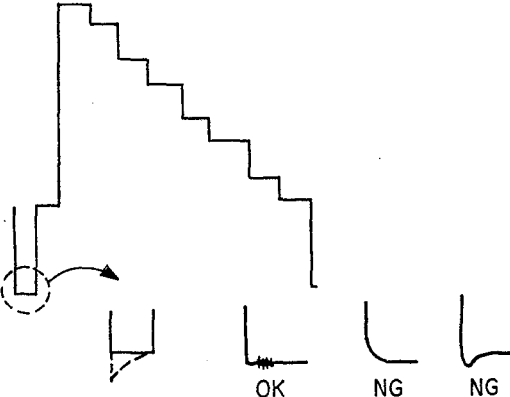
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 5-step signal to the COMPONENT 2 IN connector.</li> <li>• S1/EN-48P: ON</li> <li>• MODE: EE</li> <li>• Fully turn RV501 on the VO-18P to counterclockwise.</li> </ul>	<p>VIDEO OUT 2 (Terminated in 75 ohms.) (WFM)</p>  <p>No level difference should appear.</p>	<p>RV2/VO-18P(A-5)</p> <p>TRIG: REF. VIDEO OUT/connector panel</p>

<p>Step 2</p> <ul style="list-style-type: none"> <li>• BLACK LEVEL PRESET/MANUAL sw: MANUAL</li> <li>• Fully turn the BLACK LEVEL control to clockwise.</li> </ul>	<p>VIDEO OUT 2 (Terminated in 75 ohms.)</p>  <p><math>A = 100 \pm 5 \text{ mV}</math></p>	<p>RV4/V0-18P(B-6)</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• Fully turn the BLACK LEVEL control to counterclockwise.</li> <li>• After adjustment is completed, return the above switches to former position.</li> </ul>	<p>VIDEO OUT 2 (Terminated in 75 ohms.)</p>  <p><math>B = -80 \pm 10 \text{ mV}</math></p>	<p>RV501/V0-18P(C-5)</p> <p>TRIG: REF. VIDEO OUT/ connector panel</p>

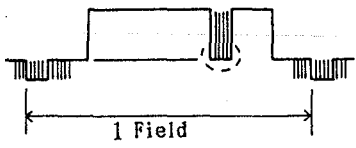
#### 12-8-4. Composite Sync Waveform Shaping Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• S1/EN-48P: ON</li> <li>• MODE: EE</li> <li>• After adjustment is completed, set S1 on the EN-48P board to the former position.</li> </ul>	<p>VIDEO OUT 2 (Terminated in 75 ohms.) (WFM)</p>  <p>Adjust to be most rectangular.</p>	<p>LV2/V0-18P(F-5)</p> <p>TRIG: INT</p>

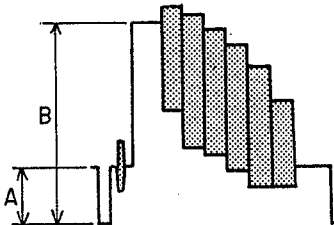
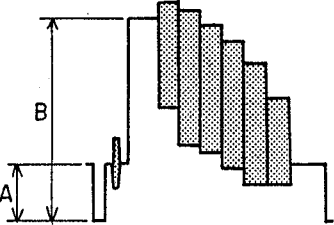
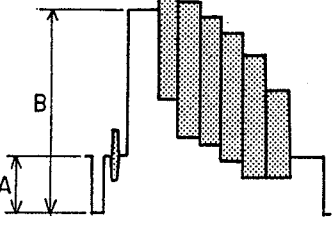
### 12-8-5. Component Sync Waveform Shaping Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• S1/EN-48P: ON</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set S1 on the EN-48P board to the former position.</p>	<p>COMPONENT 2 Y OUT (Terminated in 75 ohms.) (WFM)</p>  <p>Adjust to be most rectangular.</p>	<p>● LV1/V0-18P(E-4)</p> <p>TRIG: INT</p>

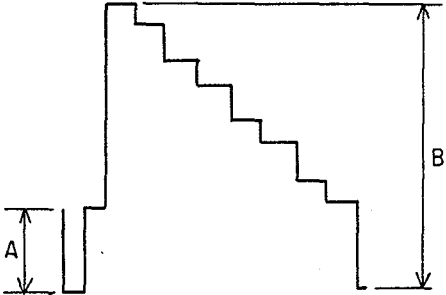
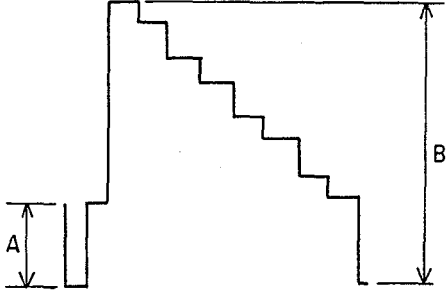

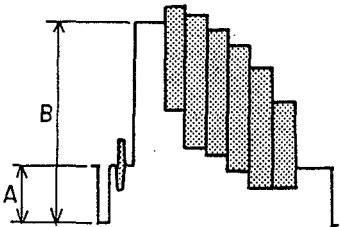
### 12-8-6. Character Pedestal Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• CHARACTER sw/SY-64P: ON</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> <li>• S1/EN-48P: ON</li> <li>• S1/V0-18P: B Black</li> <li>• BLACK LEVEL PRESET/MANUAL sw: PRESET</li> </ul> <p>• After adjustment is completed, set S1 on the EN-48P and V0-18P boards to the former position.</p>	<p>VIDEO OUT 3 (Terminated in 75 ohms)</p>  <p>Eliminate the level difference at the pedestal portion.</p> <p><math>0 \pm 0.05 \text{ Vdc}</math></p>	<p>● RV14/V0-18P(A-6)</p> <p>TRIG: INT</p>

# 12-8-7. Video Output Level Adjustment

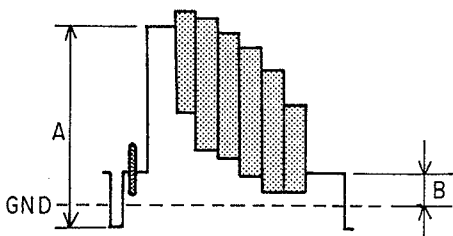
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> </ul>	<p>Step 1 VIDEO OUT 1 (Terminated in 75 ohms)</p>  <p>A (Sync Level) = <math>0.3 \pm 0.003</math> Vp-p B (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV10/VO-18P(E-5)</li> <li>• Y Level RV5/VO-18P(E-5)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>
	<p>Step 2 VIDEO OUT 2 (Terminated in 75 ohms)</p>  <p>A (Sync Level) = <math>0.3 \pm 0.003</math> Vp-p B (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV16/VO-18P(F-6)</li> <li>• Y Level RV20/VO-18P(G-6)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>
	<p>Step 3 VIDEO OUT 3 (Terminated in 75 ohms)</p>  <p>A (Sync Level) = <math>0.3 \pm 0.003</math> Vp-p B (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV17/VO-18P(F-5)</li> <li>• Y Level RV13/VO-18P(G-5)</li> </ul> <p>TRIG: REF.VIDEO OUT/ connector panel</p>



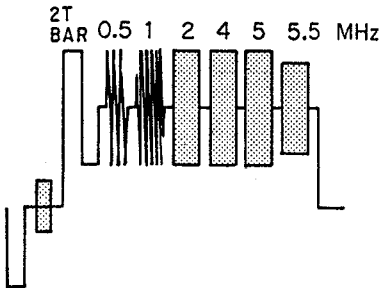
	<p>Step 4 DUB/COMPONENT 1 OUT (Terminated in 75 ohms)</p>  <p>A (Sync Level) = <math>0.3 \pm 0.003</math> Vp-p B (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV11/VO-18P(E-4)</li> <li>• Y Level RV702/VO-18P(C-3)</li> </ul> <p>TRIG: REF. VIDEO OUT/ connector panel</p>
	<p>Step 5 COMPONENT 2 Y OUT (Terminated in 75 ohms)</p>  <p>A (Sync Level) = <math>0.3 \pm 0.003</math> Vp-p B (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<ul style="list-style-type: none"> <li>• Sync Level RV19/VO-18P(B-4)</li> <li>• Y Level RV9/VO-18P(A-4)</li> </ul> <p>TRIG: REF. VIDEO OUT/ connector panel</p>
	<p>Step 6 TP17/VO-18P(G-5)</p>  <p>A (Y Level) = <math>1.00 \pm 0.01</math> Vp-p</p>	<p>RV21/VO-18P(H-4) TRIG: REF. VIDEO OUT/ connector panel</p>

• After this adjustment is completed, make Sec. 12-7-4.

## 12-8-8. TBC Bypass Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a 100% color-bars signal to the VIDEO IN connector.</li> <li>• TBC BYPASS sw/subcontrol panel: BYPASS</li> <li>• MODE: EE</li> </ul> <p>• After adjustment is completed, set the TBC BYPASS switch to ON.</p>	<p>VIDEO OUT 1 (Terminated in 75 ohms.)</p>  <p>A (Composite video level) = <math>1.0 \pm 0.02</math> Vp-p</p> <p>B (Set the pedestal level) = <math>0 \pm 0.01</math> Vdc.</p>	<ul style="list-style-type: none"> <li>• Video Level RV22/V0-18P(E-7)</li> <li>• Pedestal Level RV23/V0-18P(F-6)</li> </ul> <p>TRIG: VIDEO OUT 1/ connector panel</p>

## 12-8-9. Frequency Response Adjustment

machine conditions for adjustment	specifications	adjustments																
<ul style="list-style-type: none"><li>• Play back a multi burst signal on alignment tape CR5-1B PS.</li><li>• S1/EN-48P: ON</li></ul>	<p>VIDEO OUT 1 (Terminated in 75 ohms.)</p>  <p>Observe the level of the waveform in the moire center.</p> <table><thead><tr><th>Freq.</th><th>Level</th></tr></thead><tbody><tr><td>2T bar</td><td>100 %(Ref.)</td></tr><tr><td>0.5MHz</td><td>100 ± 4 %</td></tr><tr><td>1.0MHz</td><td>100 ± 4 %</td></tr><tr><td>2.0MHz</td><td>100 ± 4 %</td></tr><tr><td>4.0MHz</td><td>100 ± 4 %</td></tr><tr><td>5.0MHz</td><td>98 ± 4 %</td></tr><tr><td>5.5MHz</td><td>75% or more</td></tr></tbody></table>	Freq.	Level	2T bar	100 %(Ref.)	0.5MHz	100 ± 4 %	1.0MHz	100 ± 4 %	2.0MHz	100 ± 4 %	4.0MHz	100 ± 4 %	5.0MHz	98 ± 4 %	5.5MHz	75% or more	<p>●CV1/V0-18P(D-5)</p> <p>TRIG: VIDEO OUT 1/ connector panel</p>
Freq.	Level																	
2T bar	100 %(Ref.)																	
0.5MHz	100 ± 4 %																	
1.0MHz	100 ± 4 %																	
2.0MHz	100 ± 4 %																	
4.0MHz	100 ± 4 %																	
5.0MHz	98 ± 4 %																	
5.5MHz	75% or more																	



## SECTION 13

### TBC ALIGNMENT

#### 【Equipment Required】

- Dual-trace oscilloscope
- PAL signal generator (Tektronix TSG-271 or the equivalent)
- Waveform vector monitor (Tektronix 1751 or the equivalent)
- Frequency counter
- Alignment tape CR5-2A PS or CR5-1B PS

CR5-2A PS (8-960-098-44) Contents

TIME min, sec	VIDEO TRACK
0:00	75% Color Bars
3:00	Multi Burst Y: 0.5, 1, 2, 3, 4.1, 4.5 MHz C: 0.2, 0.5, 1, 1.5, 2.0 MHz
6:00	
9:00	Bowtie & 10T
11:00	Pulse & Bar C: No signal
13:00	Quad Phase
15:00	COMPOSITE Monoscope Video Phase, Diehedral

#### 【Switch Setting】

##### • Subcontrol Panel

SETUP switch : PRESET  
 Y/C DELAY switch : PRESET  
 HUE switch : PRESET  
 TBC CONTROL switch : INT  
 VIDEO INPUT switch : AUTO  
 TBC BYPASS switch : ON

##### • Level Control Panel

INPUT SELECT switch : COMPOSITE

##### • Function Control Panel

PB • PB/EE switch : PB/EE

##### • Connector Panel

REF VIDEO switch : EXT  
 REF VIDEO 75Ω termination : ON

CR5-1B PS (8-960-096-91) Contents

TIME min, sec	VIDEO TRACK	AFM
0:00	RF Sweep Marker 1, 2, 4, 6, 8, 10, 12 MHz	No-Signal
2:00	60% H. Sweep (CTDM) Marker 0. 5, 1, 2, 3, 4, 5 MHz	
5:00	Pulse & Bar (CTDM)	
8:00	Multi Burst Y:0. 5, 1, 2, 4, 5, 5. 5 MHz C:0. 2, 0. 5, 1, 1. 5, 2 MHz	
11:00		
14:00	Pulse & Bar	
16:30	100% Color Bars	400Hz Sine Wave 25kHz Deviation
17:00		75kHz Deviation
19:00	50% Bowtie & 10T	No-Signal
22:00	Line 17A Signal	
24:00	Quad Phase	
26:00	Flat Field	
28:00	100% Color Bars with dropout	
30:00	Composite H. Sweep with VISC	

【Connection】

Fig. 1

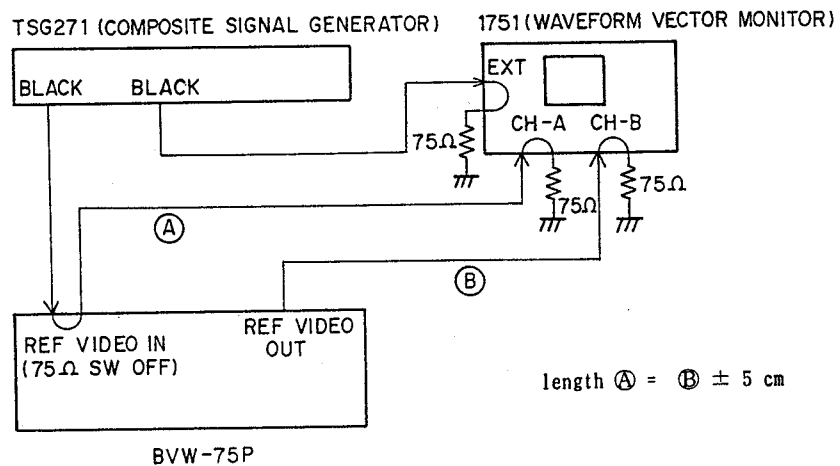


Fig. 2

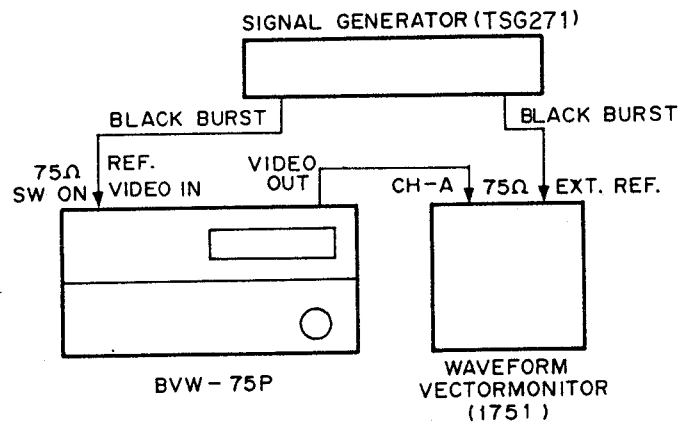


Fig. 3

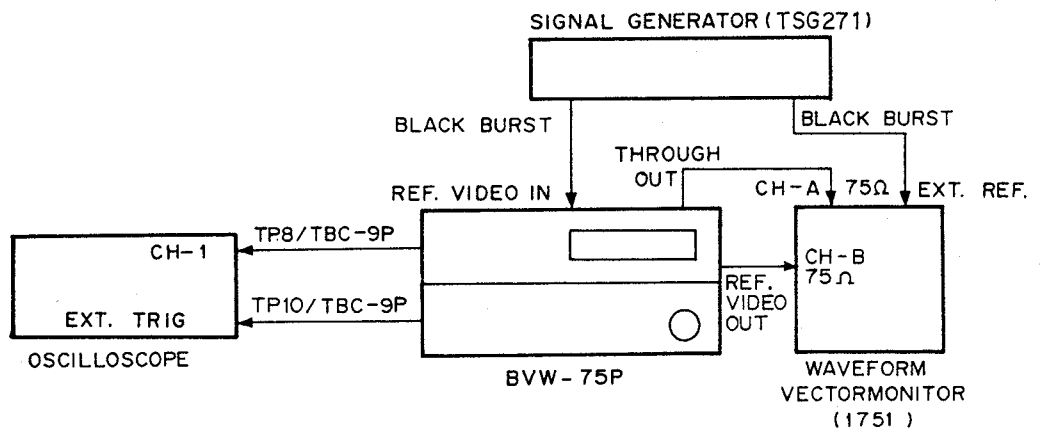


Fig. 4

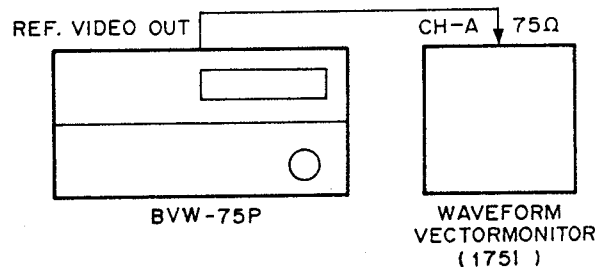


Fig. 5

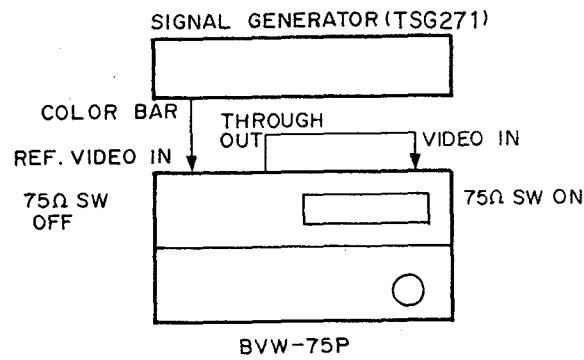


Fig. 6

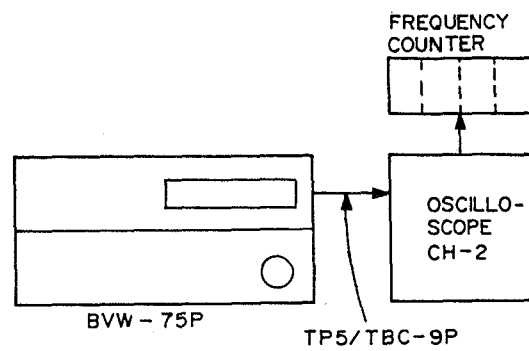
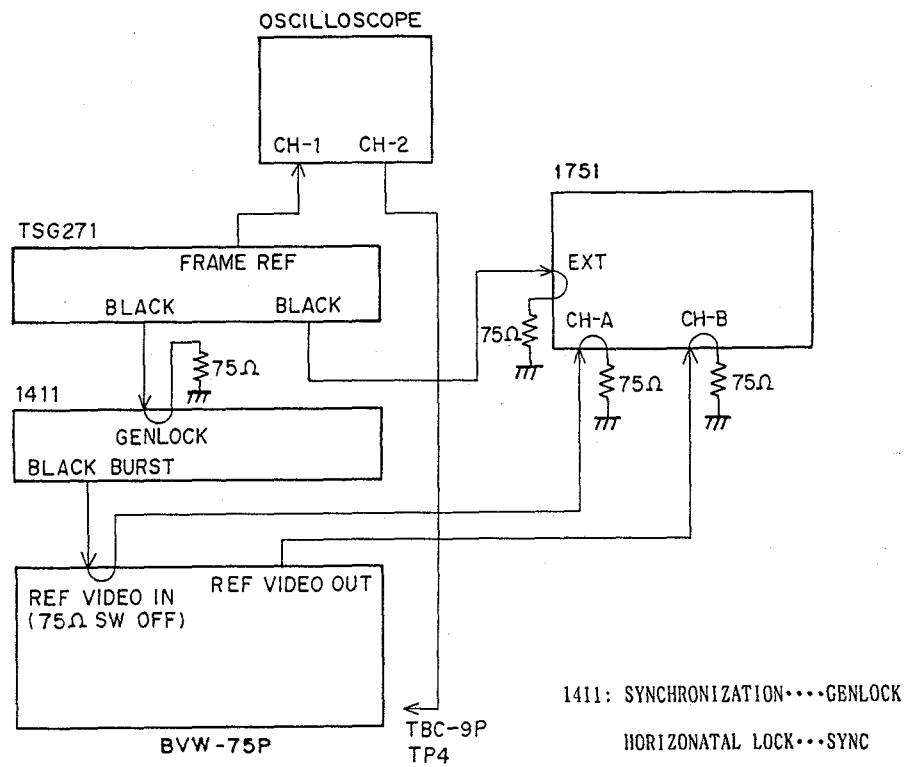
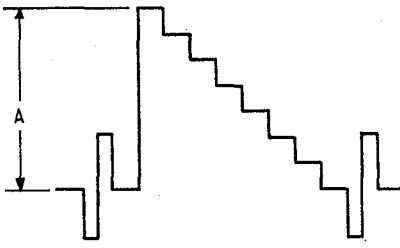


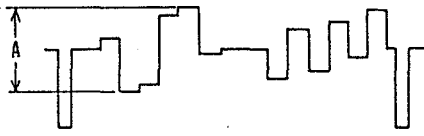
Fig. 7



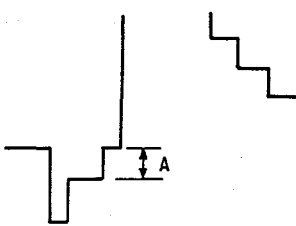
### 13-1. Y-AD IN LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP101/TBC-7D(G-2)</p>  <p><math>A = 1.60 \pm 0.05 \text{ Vp-p}</math></p>	<p>RV100/TBC-7D(F-2)</p> <p>TRIG: TP101/TBC-7D(G-2)</p>

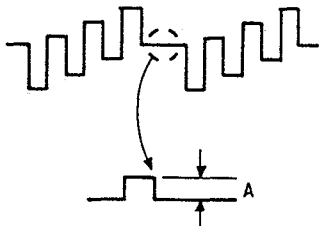
### 13-2. C-AD IN LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP401/TBC-7D(C-2)</p>  <p><math>A = 1.75 \pm 0.05 \text{ Vp-p}</math></p>	<p>RV400/TBC-7D(C-2)</p> <p>TRIG: TP401/TBC-7D(C-2)</p>

### 13-3. Y-AD IN PEDESTAL CLAMP ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP201/TBC-12P(B-1)</p>  <p><math>A = 0</math> No level difference should appear.</p>	<p>RV101/TBC-7D(F-2)</p> <p>Turn RV101 clockwise so that the specification is met after it is fully turned counterclockwise.</p> <p>TRIG: TP201/TBC-12P(B-1)</p>

### 13-4. C-AD IN CLAMP LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP501/TBC-12P(A-1)</p>  <p>A = 0 No level difference should appear.</p>	<p>RV401/TBC-7D(C-2)</p> <p>Turn RV401 clockwise so that the specification is met after it is fully turned counterclockwise.</p> <p>TRIG: TP501/TBC-12P(A-1)</p>

### 13-5. Y-NORMAL VCO ADJUSTMENT

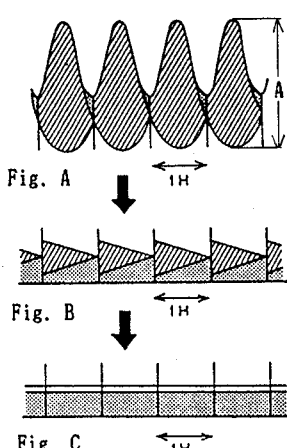
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• MODE: EE</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Using a digital voltmeter.</li> </ul>	<p>TP201/TBC-7D(H-5) TP207/TBC-7D(J-5)</p> <p><math>TP207 - TP201 = 0 \pm 0.1 \text{ Vdc}</math></p> <p>{ Make the dc level at TP201 coincide with that at TP207. }</p>	<p>LV200/TBC-7D(H-5)</p>

### 13-6. C NORMAL VCO ADJUSTMENT

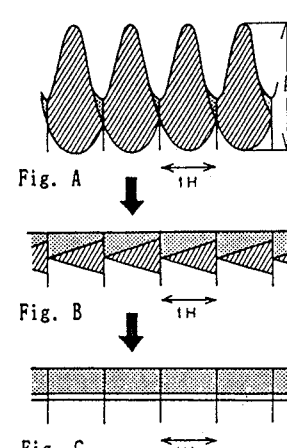
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bar signal to the COMPONENT 2 IN connector.</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• MODE: EE</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Using a digital voltmeter.</li> </ul>	<p>TP501/TBC-7D(B-5) TP506/TBC-7D(B-6)</p> <p><math>TP506 - TP501 = 0 \pm 0.1 \text{ Vdc}</math></p> <p>{ Make the dc level at TP501 coincide with that at TP506. }</p>	<p>LV500/TBC-7D(B-5)</p>



### 13-7. Y-WCK FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• MODE: EE</li> <li>• Set the range of the oscilloscope to 1Vdc, 20<math>\mu</math>s/DIV and measure it in the CH-1/CH-2 (INT) ADD mode.</li> <li>• INPUT SELECT sw: Y-R, B</li> </ul>	<p>CH-1: TP801/TBC-12P(H-1) CH-2: TP203/TBC-7D(G-4)</p>  <p>Inverted and added signal waveform at TP801/TBC-12P and TP203/TBC-7D</p> <p>Minimize the added waveform A using the SYNC FINE VR on the subcontrol panel as shown in Fig. B, and make the frequency coincide each other using RV201 as shown in Fig. C (if the lines are parallel, the frequency coincides).</p>	<p>SYNC FINE VR/Subcontrol panel (Phase adjustment)</p> <p>RV201/TBC-7D(F-7) (Frequency adjustment)</p> <p>TRIG: EXT. black burst HD</p>

### 13-8. C-WCK FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to the COMPONENT 2 IN connector.</li> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• MODE: EE</li> <li>• Set the range of the oscilloscope to 1Vdc, 20<math>\mu</math>s/DIV and measure it in the CH-1/CH-2 (INT) ADD mode.</li> <li>• INPUT SELECT sw: Y-R, B</li> </ul>	<p>CH-1: TP801/TBC-12P(H-1) CH-2: TP502/TBC-7D(C-5)</p>  <p>Inverted and added signal waveform at TP801/TBC-12P and TP502/TBC-7D</p> <p>Minimize the added waveform A using the SYNC FINE VR on the subcontrol panel as shown in Fig. B, and make the frequency coincide each other using RV501 as shown in Fig. C (if the lines are parallel, the frequency coincides).</p>	<p>SYNC FINE VR/subcontrol panel (Phase adjustment)</p> <p>RV501/TBC-7D(A-2) (Frequency adjustment)</p> <p>TRIG: EXT. black burst HD</p>

### 13-9. Y-WCK FRB. ERROR VOLTAGE ADJUSTMENT

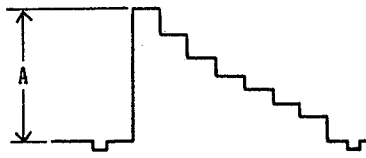
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• PB. PB/EE sw: PB</li> <li>• Turn S200 on the TBC-7D board to OFF (right side), and S1 on the EN-48P board to ON (right side).</li> <li>• Insert alignment tape CR5-1B PS and play back a 100% color-bars signal into the SEARCH REV <math>\times 24</math> mode.</li> <li>• After adjustment is completed, set the PB. PB/EE switch to PB/EE and set S200 on the TBC-7D board and S1 on the EN-48P board to the former position.</li> <li>• Using a digital voltmeter.</li> </ul>	TP202/TBC-7D(J-7)  $6.0 \pm 0.1 \text{ Vdc}$	⚙️ LV201/TBC-7D(J-4)

### 13-10. Y-FFB OFFSET ADJUSTMENT

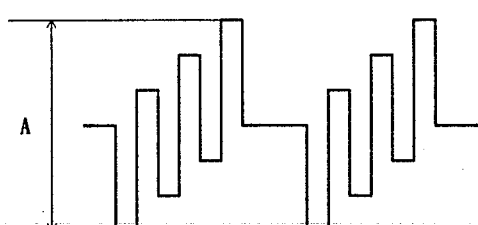
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>• Turn S200 on the TBC-7D board to OFF (right side), and S1 on the EN-48P board to ON (right side).</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS into the SEARCH REV <math>\times 5</math> mode.</li> <li>• Using a digital voltmeter.</li> </ul>	TP202/TBC-7D(J-7)  $3.5 \pm 0.1 \text{ Vdc}$	⚙️ RV202/TBC-7D(J-5)
<b>Step 2</b> <ul style="list-style-type: none"> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS into the SEARCH FWD <math>\times 5</math> mode.</li> <li>• After adjustment is completed, set S200 on the TBC-7D board and S1 on the EN-48P board to the former position.</li> <li>• Using a digital voltmeter.</li> </ul>	TP202/TBC-7D(J-7)  $7.5 \pm 0.1 \text{ Vdc}$	⚙️ RV203/TBC-7D(J-6)



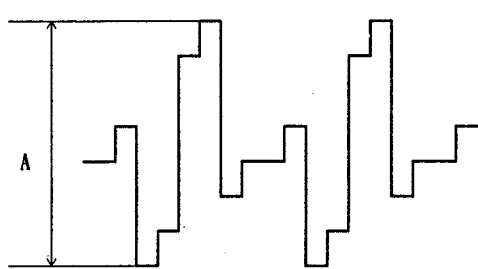
### 13-11. Y LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP201/TBC-12P(B-1)</p>  <p><math>A = 1.0 \pm 0.01 \text{ Vp-p}</math></p>	<p>RV200/TBC-12P(E-1)</p> <p>TRIG: TP201/TBC-12P(B-1)</p>

### 13-12. C LEVEL ADJUSTMENT (B-Y)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP501/TBC-12P(A-1)</p>  <p><math>A = 1.20 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV500/TBC-12P(E-1)</p> <p>TRIG: TP501/TBC-12P(A-1)</p>

### 13-13. C LEVEL ADJUSTMENT (R-Y)

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• Play back a 100% color-bars signal on alignment tape CR5-1B PS.</li> </ul>	<p>TP503/TBC-12P(B-1)</p>  <p><math>A = 1.20 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV502/TBC-12P(E-1)</p> <p>TRIG: TP503/TBC-12P(B-1)</p>

### 13-14. Y LINEARITY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 5 STEP signal to COMPONENT 2 Y IN connector.</li> <li>• MODE: EE</li> <li>• WFM RESPONSE: DIFF'D STEP</li> </ul>	<p>COMPONENT 2 Y OUT</p> <p>Highest level Lowest level 100% <math>A \leq 3\%</math></p>	<p>RV103/TBC-7D(F-4)</p> <p>TRIG: INT</p>

### 13-15. C LINEARITY ADJUSTMENT

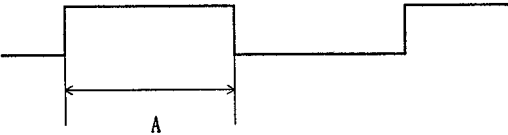
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 5 STEP signal to COMPONENT 2 R-Y IN connector.</li> <li>• MODE: EE</li> <li>• WFM RESPONSE: DIFF'D STEP</li> </ul>	<p>COMPONENT 2 R-Y OUT</p> <p>Highest level Lowest level 100% <math>A \leq 4\%</math></p>	<p>RV402/TBC-7D(C-4)</p> <p>TRIG: COMPONENT 2 Y OUT</p>

### 13-16. DT SWITCHING PULSE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 100% color-bar signal on alignment tape CR5-1B PS.</li> <li>• DT SELECT sw: VAR</li> <li>• MODE: FWD×2</li> </ul>	<p>TP901/DM-56P(C-1)</p> <p>TP601/TBC-12P(A-5)</p> <p><math>A = 10.0 \pm 2.0 \mu\text{sec}</math></p> <p>The waveform at TP901 also allows the curve indicated by the dotted line.</p>	<p>RV601/TBC-12P(C-7)</p> <p>TRIG: TP601/TBC-12P(A-5)</p>

### 13-17. HALF H BLANKING ADJUSTMENT

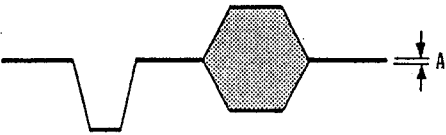
• Sections 13-17 to 13-26 should be performed before section 12.

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Power ON.</li> </ul>	<p>TP9/TBC-9P(A-1)</p>  <p><math>A = 42.5 \pm 0.5 \mu\text{sec}</math></p>	<p>RV11/TBC-9P(B-2)</p> <p>TRIG: TP9/TBC-9P(A-1)</p>

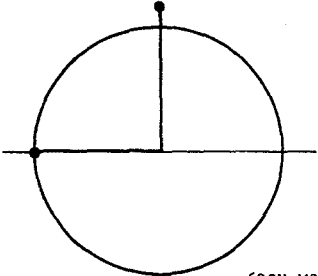
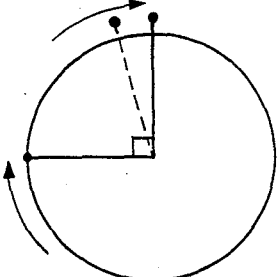
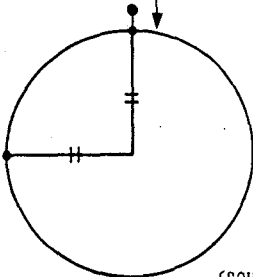
### 13-18. INT SUBCARRIER FREQUENCY ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Set the REF VIDEO IN and DUB/COMPONENT 1 OUT connectors to OPEN.</li> <li>• CONNECTION: Fig. 6</li> </ul>	<p>TP5/TBC-9P(B-5)</p> <p>SC frequency <math>4,433,619 \pm 10 \text{ Hz}</math></p>	<p>RV1/TBC-9P(D-5)</p>

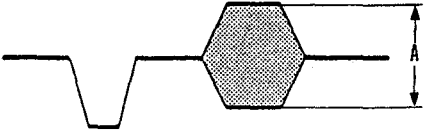
### 13-19. REF VIDEO OUT CARRIER BALANCE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO OUT connector.</li> <li>• CONNECTION: Fig. 4</li> </ul>	<p>REF VIDEO OUT (Terminated in 75 ohms.)</p>  <p><math>A</math> : Minimize (10 mVp-p or less)</p>	<p>RV8/TBC-9P(D-6)</p> <p>TRIG: INT</p>

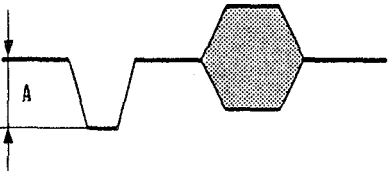
# 13-20. REF VIDEO BURST PHASE/BALANCE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>REF VIDEO IN 75 <math>\Omega</math> sw: OFF</li> <li>Terminate the waveform vector monitor CH-A in 75 ohms and set the VECT <math>\times 5</math> mode.</li> <li>CONNECTION: Fig. 1</li> <li>Set the GAIN to UNCAL mode.</li> </ul>	<p>CH-A : REF. VIDEO OUT</p>  <p>(SCH MODE)</p> <ul style="list-style-type: none"> <li>Adjust using the GAIN UNCAL VR and the PHASE VR of the waveform vector monitor so that the lower point of the burst signal is shifted to 0° in the circumference.</li> </ul>	<p>GAIN UNCAL VR/1751 PHASE VR/1751</p>
<p>Step 2</p>	<p>CH-A : REF. VIDEO OUT</p>  <p>(SCH MODE)</p> <ul style="list-style-type: none"> <li>Adjust so that the angle of the burst phase is set to 90°.</li> </ul>	<p>RV7/TBC-9P(C-5)</p>
<p>Step 3</p>	<p>CH-A : REF. VIDEO OUT</p>  <p>(SCH MODE)</p> <ul style="list-style-type: none"> <li>Adjust so that both the two points of the burst are in the circumference.</li> </ul>	<p>RV6/TBC-9P(C-5)</p>

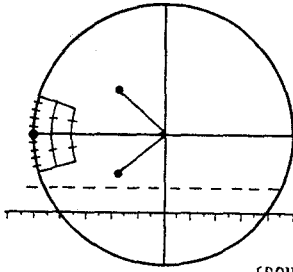
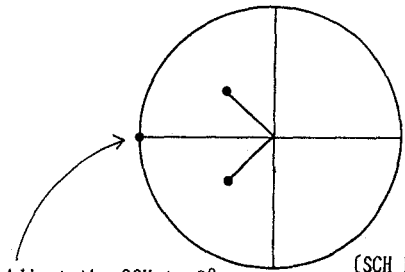
### 13-21. REF VIDEO OUT BURST LEVEL ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• CONNECTION: Fig. 4</li> </ul>	<p>REF VIDEO OUT (Terminated in 75 ohms.)</p>  <p><math>A = 300 \pm 10 \text{ mVp-p}</math></p>	<p>RV9/TBC-9P(D-6)</p> <p>TRIG: INT</p>

### 13-22. REF VIDEO OUT SYNC LEVEL ADJUSTMENT

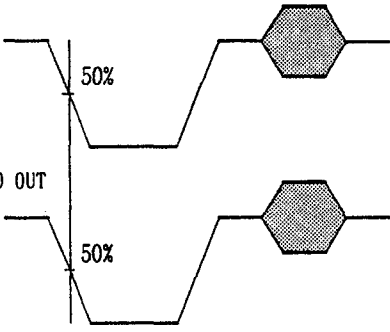
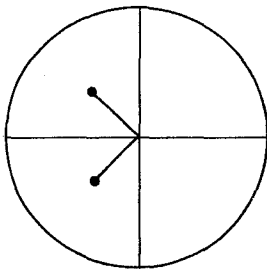
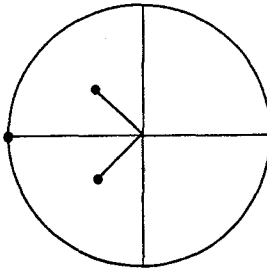
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Supply a black burst signal to the REF VIDEO IN connector.</li> <li>• CONNECTION: Fig. 4</li> </ul>	<p>REF VIDEO OUT (Terminated in 75 ohms.)</p>  <p><math>A = 300 \pm 10 \text{ mVp-p}</math></p>	<p>RV10/TBC-9P(C-7)</p> <p>TRIG: INT</p>

# 13-23. INT SUBCARRIER PHASE ADJUSTMENT

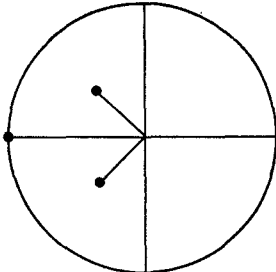
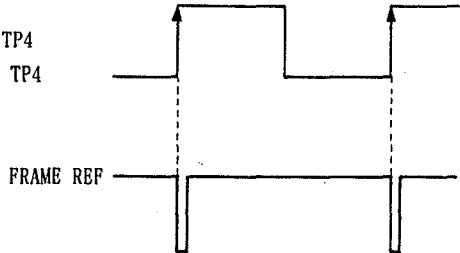
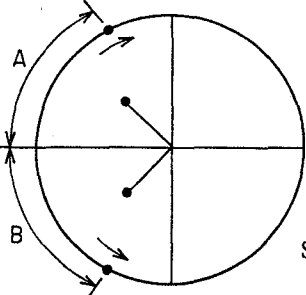
machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>Set the REF VIDEO IN connector to OPEN.</li> <li>Terminate the waveform vector monitor's CH-A in 75 ohms and set the EXT REF button to INT.</li> <li>CONNECTION: Fig. 4</li> </ul>	<p>Step 1</p> <p>CH-A : REF. VIDEO OUT</p>  <p>(SCH MODE)</p> <ul style="list-style-type: none"> <li>Adjust using the waveform vector monitor's PHASE control so that the burst phase is set to the scale marker.</li> </ul>	
	<p>Step 2</p> <p>CH-A : REF. VIDEO OUT</p>  <p>Adjust the SCH to 0°</p> <p>(SCH MODE)</p> <ul style="list-style-type: none"> <li>Adjust the SCH's luminance spot according to the specification.</li> </ul>	RV4/TBC-9P(E-5)







# 13-24. SYNC PHASE ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>REF VIDEO IN 75 <math>\Omega</math> sw: OFF</li> <li>Set the EXT REF button of the waveform vector monitor to ON.</li> <li>CONNECTION: Fig. 1</li> <li>Push SWEEP MAG on the waveform vector monitor. (SWEEPS . . . 2H)</li> </ul>	<p>Step 1 ROUGH ADJ. (WFM MODE)</p> <p>CH-A: REF VIDEO IN</p>  <p>CH-B: REF VIDEO OUT</p> <p>Same phase</p> <ul style="list-style-type: none"> <li>Adjust by pressing CH-A and CH-B switches of the 1751 alternately.</li> </ul>	<p>RV2/TBC-9P(D-4)</p> <p>TRIG: TSG-271 BLACK</p>
	<p>Step 2 (SCH MODE)</p> <p>CH-A: REF VIDEO IN</p> <p>CH-B: REF VIDEO OUT</p>  <ul style="list-style-type: none"> <li>Adjust the burst phase in CH-B with that CH-A. (CH-A Ref.)</li> <li>Adjust by pressing CH-A and CH-B switches of the 1751 alternately.</li> </ul>	<p>RV5/TBC-9P(D-5)</p> <p>TRIG: TSG-271 BLACK</p>
	<p>Step 3</p> <p>CH-A: REF VIDEO IN</p> <p>CH-B: REF VIDEO OUT</p>  <p>(SCH:MODE)</p> <ul style="list-style-type: none"> <li>Adjust the SCH phase in CH-B with that CH-A. (CH-A Ref.)</li> <li>Adjust by pressing CH-A and CH-B switches of the 1751 alternately.</li> </ul>	<p>RV2/TBC-9P(D-4)</p> <p>TRIG: TSG-271 BLACK</p>

# 13-25. REF 1st FIELD ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> • CONNECTION: Fig. 7	CH-A: REF.VIDEO IN THROUGH OUT  SCH 0° (SCH MODE)	● SUBCARRIER VR/1411 ● PHASE VR/1751
<b>Step 2</b>	CH-1: TP4/TBC-9P(C-4) CH-2: FRAME REF/TSG-271  Adjust the FRAME REF pulse so that appears at the falling edge of TP4.	• Tentative adjustment ● RV12/TBC-9P(C-4)
<b>Step 3</b>	CH-A: REF.VIDEO IN THROUGH OUT  $A = B \pm 5^\circ$ When the SUBCARRIER VR is turned colckwise and counterclockwise, the pulse signal, which appears at the rising eade, is changed to be appeared at the falling eade. At this time, adjust RV12 so that phase A of SCH coincides with phase B.	● RV12/TBC-9P(C-4)

# 13-26. SV SYNC ADJUSTMENT

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to COMPONENT 2 IN connector.</li> <li>• INPUT SELECT sw: Y-R, B</li> <li>• PB/PB. EE sw: PB. EE</li> <li>• Supply a black burst signal to REF. VIDEO IN connector.</li> <li>• Press ASSEMBLE button on the front panel. (lights)</li> </ul>	<p>TP201/SV83(C-1)</p> <p>LIGHT: ON </p> <p>LIGHT: OFF </p> <p>A = 0</p> <p>Adjust the phase when the ASSEMBLE button is pressed repeatedly.</p>	<p>RV3/TBC-9P(C-4)</p> <p>TRIG: TP1/TBC-9P(D-5)</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Supply a 100% color-bars signal to VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> </ul>	<p>TP201/SV83(C-1)</p> <p>LIGHT: ON </p> <p>LIGHT: OFF </p> <p>A = 0</p> <p>Adjust the phase when the ASSEMBLE button is pressed repeatedly.</p>	<p>RV15/TBC-9P(C-3)</p> <p>TRIG: TP1/TBC-9P(D-5)</p>

## SECTION 14

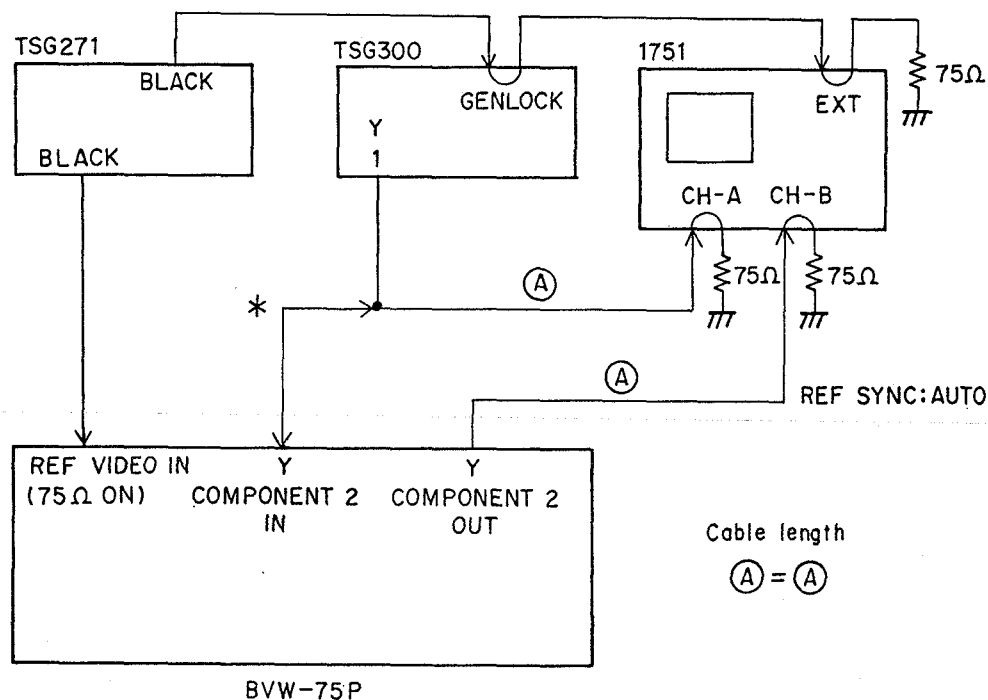
### OVERALL VIDEO ALIGNMENT

#### Adjustment during Board Replacement

- (a) When replacing the TBC-7D and TBC-12P boards at the same time, adjust from Section 14-1.
  - (b) When replacing only the defective TBC-7D board, directly adjust from Section 14-2.
  - (c) When replacing only the defective TBC-12P board, directly adjust from Section 14-2.
    - For Step 3 in Section 14-2-1, however, adjust using RV702 (C-3) on the NR-32 board instead of RV200 on the TBC-7D board.
    - For Section 14-2-2, adjust using RV701 (C-3) on the NR-32 board instead of RV500 on the TBC-7D board.
- RV501 on the TBC-12P board can be used for adjustment as it is.

#### 14-1. DIGITAL OUT VIDEO PHASE, Y/C DELAY ADJUSTMENTS (USING A SIGNAL GENERATOR, SG-161 (J-6336-170-A))

Fig 1

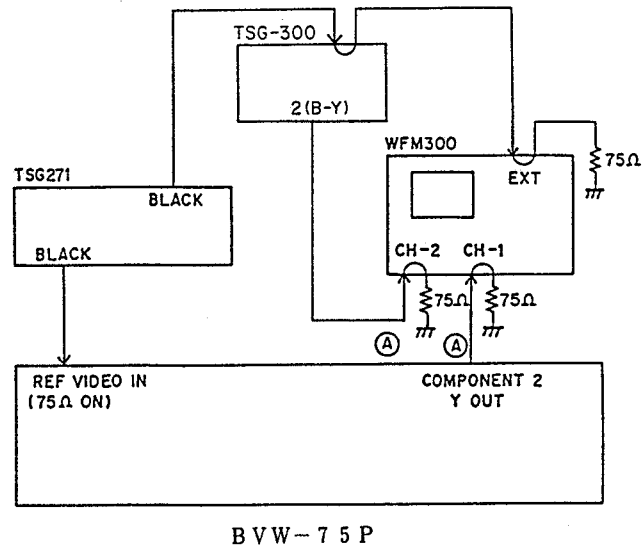


The length of cables marked with Ⓐ should be all the same.

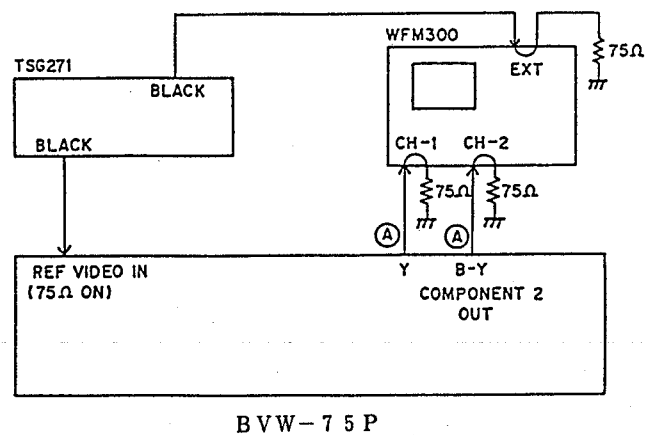
\* Not necessary for SIGNAL GENERATOR, SG-161

Fig 2

(a)



(b)



The length of cables marked with Ⓐ should be all the same.

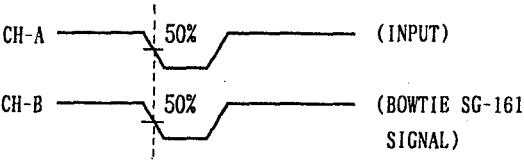
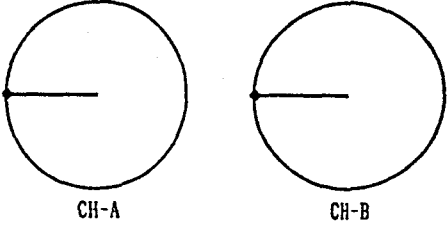
**【Switch setting】**

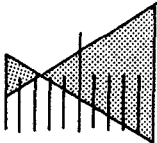
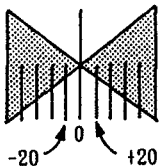
• 1751 Waveform vector monitor  
 MODE : WFM, SCH  
 INPUT : A ↔ B  
 SWEEPS : 2H MAG  
 DC RESET : OFF  
 FILTERS : FLAT  
 CAL : OFF  
 EXT REF : ON  
 FIELD SELECT : OFF  
 GAIN : NORMAL  
 LINE SELECTOR : OFF

• WFM300 Component WFM  
 MODE : BOWTIE  
 VERTICAL GAIN : ×5  
 HORIZONTAL MAG: OFF

• TSG 300  
 3 WIRE MODE  
 50% BOWTIE

Note: That the SG-161 outputs 100% bowtie signal, but TSG-300 recommendation is 50% bowtie, but no problems since signal is not recorded.

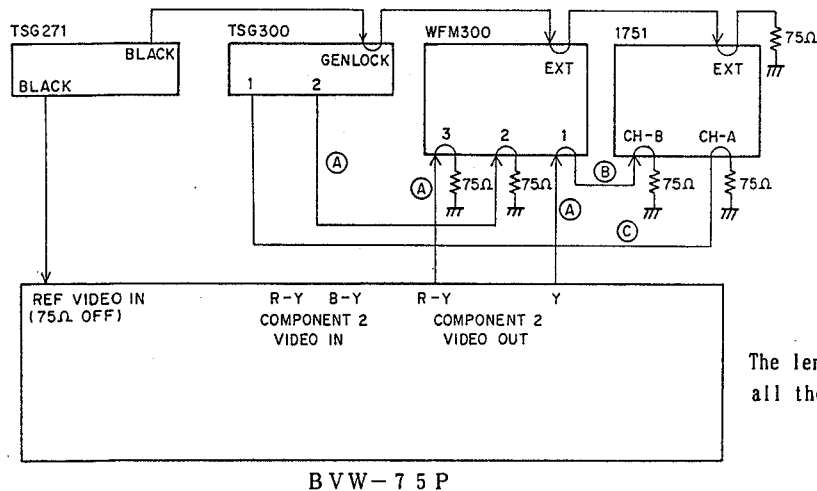
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>Remove the TBC-7D and TBC-12P boards.</li> </ul>		
<b>Step 2</b> <ul style="list-style-type: none"> <li>Insert extension board jig A (SG-161) into the TBC-12P board position and plug the TBC-12P board onto it.</li> <li>LEAVE OUT TBC-7D BOARD.</li> <li>CONNECTION: Fig 1</li> </ul>	<p>* Set TSG-300 GENLOCK TIMING with respect to TSG-271.</p>	
<b>Step 3 (coarse)</b> <ul style="list-style-type: none"> <li>INPUT SELECT sw: Y-R, B</li> <li>CAPSTAN LOCK sw/subcontrol panel : 2FD</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF)</p> <p>Adjust so that the phase at the trailing edge of a CH-B sync signal coincides with that of a CH-A sync signal.</p>	<p>SYNC controls/subcontrol panel (FINE: mechanical center)</p>
<b>Step 4 (FINE)</b>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF)</p> <p>Adjust so that the CH-B sync phase coincides with the CH-A sync phase.</p>	<ul style="list-style-type: none"> <li>CH-A PHASE control/waveform vector monitor</li> <li>CH-B SYNC (FINE) controls/sub-control panel</li> </ul>

<p>Step 5</p>	<p>Put the WAVEFORM VECTOR MONITOR again into the WFM mode.</p> <p>Check that the phase at the trailing edge of CH-A and CH-B sync signals are not shifted.</p>	
<p>Step 6 (VIDEO Phase)</p> <ul style="list-style-type: none"> <li>• VIDEO sw/subcontrol panel: MANUAL</li> <li>• CONNECTION: Fig 2 (a)</li> </ul> <p>• After adjustment is completed, set VIDEO switch to PRESET.</p>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2 (Y/B-Y)</p>  <p>Minimized the dip point. Adjust the dip point to the center marker. Y/B-Y: <math>0 \pm 10</math> nsec</p>	<p>VIDEO control/subcontrol panel</p> <p>●RV702/NR-32(C-3) on the TBC-12P board.</p> <p>This adjustment conforms to that the SG-161 (EXT SYNC) is genlocked.</p>
<p>Step 7 (Y/C DELAY)</p> <ul style="list-style-type: none"> <li>• CHROMA sw/subcontrol panel: MANUAL</li> <li>• CONNECTION: Fig 2 (b)</li> </ul> <p>• After adjustment is completed, set CHROMA switch to PRESET.</p>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2 (Y/B-Y)</p>  <p>Minimized the dip point. Adjust the dip point to the center marker. Y/B-Y: <math>0 \pm 10</math> nsec</p>	<p>CHROMA control/subcontrol panel</p> <p>●RV701/NR-32(C-3) on the TBC-12P board.</p>
<p>Step 8</p> <ul style="list-style-type: none"> <li>• Remove extension board the SG-161 and insert the TBC-7D and TBC-12P boards into the previous position.</li> </ul>		

## 14-2. PB VIDEO PHASE Y/C DELAY C/C DELAY ADJUSTMENT

### 14-2-1. PB Component Video Phase Adjustment

#### 【Connection】



The length of the cables marked with (A) should be all the same.

$$C = B + A \times 2$$

$$D = A \times 2$$

#### 【Switch Setting】

##### • 1751 Waveform vector monitor

MODE : WFM, SCH  
 INPUT : A ↔ B  
 SWEEPS : 2H MAG  
 DC RESET : OFF  
 FILTERS : FLAT  
 CAL : OFF  
 EXT REF : ON  
 FIELD SELECT : OFF  
 GAIN : NORMAL  
 LINE SELECTOR : OFF

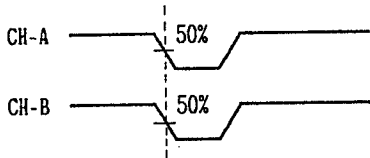
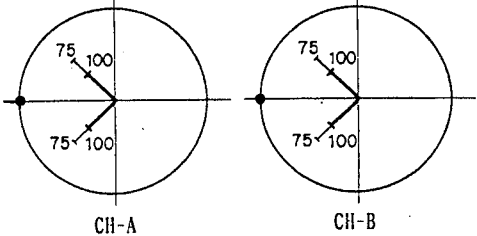
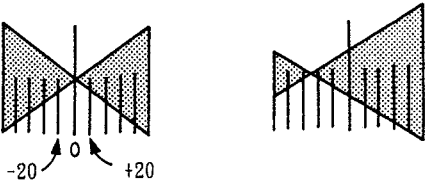
##### • WFM300 Component WFM

MODE : BOWTIE  
 VERTICAL GAIN : ×5  
 HORIZONTAL MAG: OFF

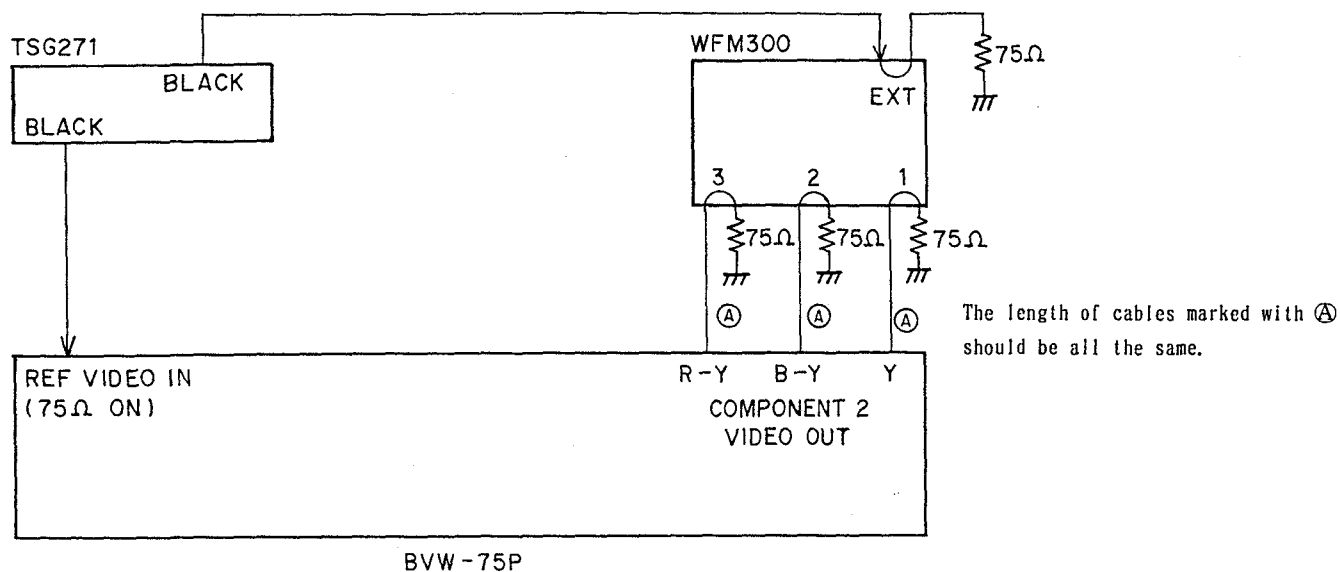
##### • TSG 300

3 WIRE MODE  
 50% BOWTIE



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Play back a 50% bowtie &amp; 10T signal on alignment tape CR5-1B PS.</li> <li>• CAPSTAN LOCK sw: 2FD</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Adjust so that the phase at the trailing edge of CH-B sync signal coincides with that of CH-A sync signal. Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF)</p>	<p>SYNC controls/ subcontrol panel (FINE: mechanical center)</p> <p>TRIG: TSG271 BLACK</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Play back a 50% bowtie &amp; 10T signal on alignment tape CR5-1B PS.</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Adjust so that the CH-B sync phase coincides with the CH-A sync phase. Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF)</p>	<ul style="list-style-type: none"> <li>• CH-A PHASE control/waveform vector monitor</li> <li>• CH-B SYNC (FINE) control/ subcontrol panel</li> </ul>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• VIDEO INPUT sw/subcontrol panel: MANUAL</li> </ul> <p>• After adjustment is completed, set VIDEO INPUT switch to PRESET.</p>	<p>COMPONENT 2 Y OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2 (Y/B-Y)      CH-1/CH-3 (Y/R-Y)</p>  <p>Minimized the dip point. Adjust the dip point to the center marker. Y/B-Y: <math>0 \pm 10</math> nsec</p>	<p>VIDEO control/subcontrol panel RV200/TBC-7D(J-3)</p> <p>TRIG: TSG271 BLACK</p>

14-2-2. PB Component, Metal Y/C, C/C Delay Adjustment  
 【Connection】



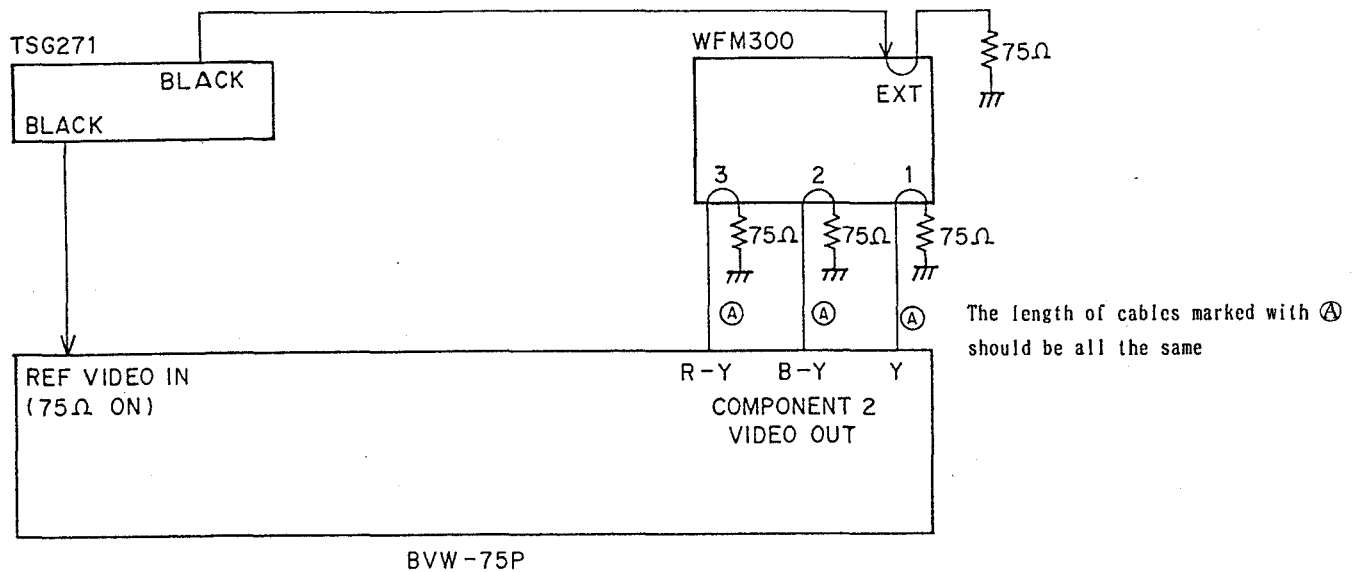
【Switch Setting】

- WFM300 Component WFM
- MODE : BOWTIE
- VERTICAL GAIN :  $\times 5$
- HORIZONTAL MAG : OFF

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a 50% bowtie &amp; 10T signal on alignment tape CR5-1B PS.</li> <li>• CHROMA sw/subcontrol panel: MANUAL</li> </ul>	<p>COMPONENT 2 OUT/connector panel                      (BOWTIE MODE/COMPONENT WFM)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>CH-1/CH-2 (Y/B-Y)</p> </div> <div style="text-align: center;"> <p>CH-1/CH-3 (Y/R-Y)</p> </div> </div> <p>Minimized the dip point by CHROMA CONTROL VR.                      Adjust the dip point to the center marker.  <math>0 \pm 10 \text{ nsec}</math></p> <p>If the adjustment cannot be made using RV500,                      remove the short chip of R853 on the solder side                      and connect it to R852.</p>	<p>CHROMA control/subcontrol panel</p> <ul style="list-style-type: none"> <li>• Y/B-Y RV500/TBC-7D(C-7)</li> <li>• Y/R-Y RV501/TBC-7D(E-1)</li> </ul> <p>* Adjust the RV500 as before.</p> <p>TRIG: TSG271 BLACK</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set CHROMA control to PRESET.</li> </ul>		

### 14-2-3. PB Component Oxide Y/C Delay Adjustment

【Connection】

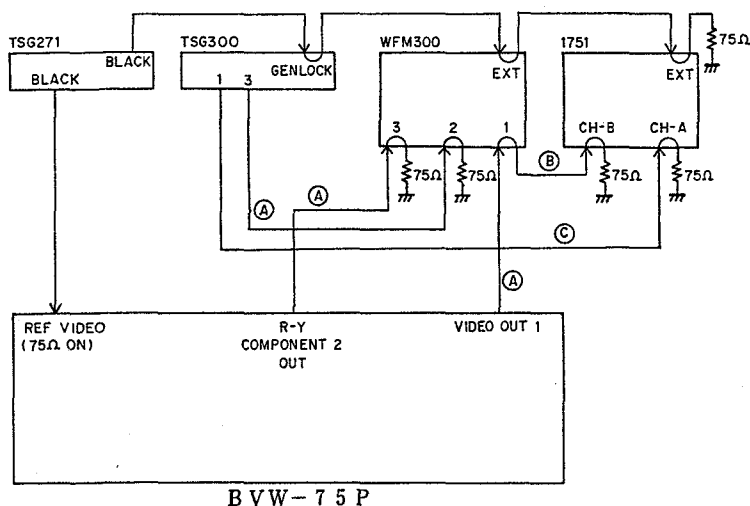


#### 【Switch Setting】

- WFM300 Component WFM
- MODE : BOWTIE
- VERTICAL GAIN :  $\times 5$
- HORIZONTAL MAG : OFF

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a bowtie signal on alignment tape CR5-2A PS.</li> <li>• CHROMA control/subcontrol panel: MANUAL</li> </ul>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <p>CH-1/CH-2 (Y/B-Y)      CH-1/CH-3 (Y/R-Y)</p> <p>Minimized the dip point by CHROMA CONTROL VR. Adjust the dip point to the center marker. <math>0 \pm 10 \text{ nsec}</math></p> <ul style="list-style-type: none"> <li>• When the adjustment cannot be made using RV503, remove the short chip of R853 on the solder side and connect it to R852.</li> </ul>	<p>CHROMA control/ subcontrol panel</p> <p>●RV503/TBC-7D(B-6)</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set CHROMA switch to PRESET.</li> </ul>		

# 14-2-4. PB Composite Video Phase Adjustment 【Connection】



## 【Switch Setting】

### • 1751 Waveform vector monitor

MODE : WFM ↔ SCH  
 INPUT : A ↔ B  
 SWEEPS : 2H MAG  
 DC RESET : OFF  
 FILTERS : FLAT  
 CAL : OFF  
 EXT REF : ON  
 FIELD SELECT : OFF  
 GAIN : NORMAL  
 LINE SELECTOR : OFF

### • WFM300 Component WFM

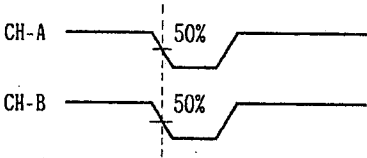
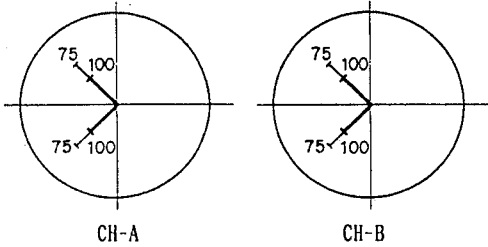
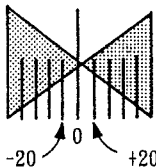
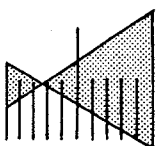
MODE : BOWTIE  
 VERTICAL GAIN : ×5  
 HORIZONTAL MAG: OFF

### • TSG 300

3 WIRE MODE  
 50% BOWTIE

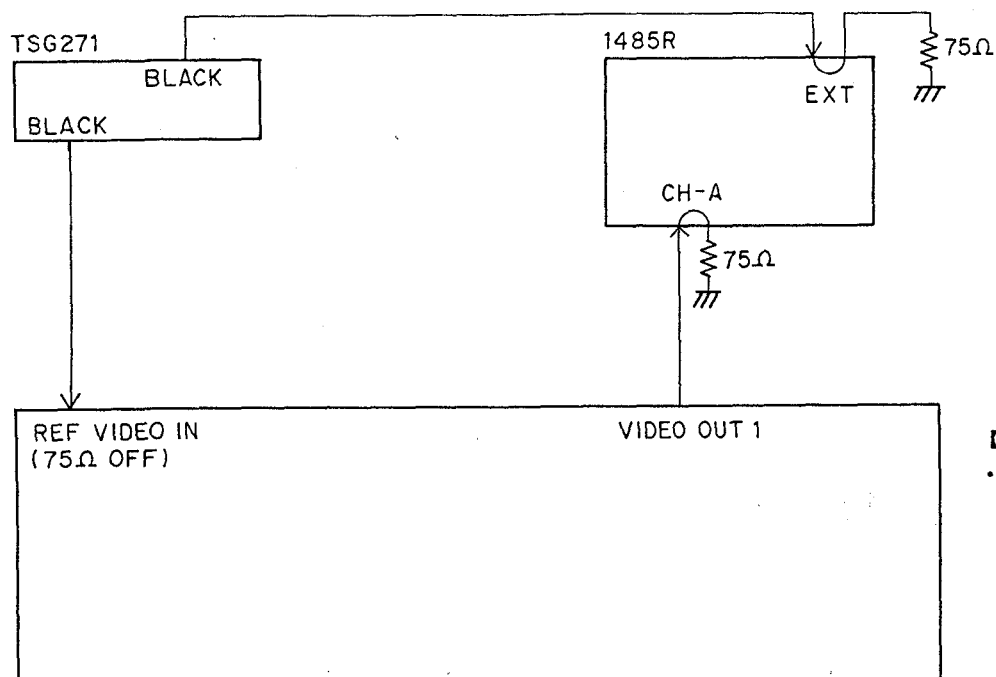
• The length of cables marked with (A) should be all the same.

$$C = B + A \times 2$$

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• S1/EN-48P(A-3): ON</li> <li>• Play back a bowtie &amp; 10T signal on alignment tape CR5-1B PS.</li> <li>• CAPSTAN LOCK sw: 2FD</li> </ul>	<p>VIDEO OUT 1/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Align the sync phase in CH-B with that in CH-A.</p>	<p>SYNC controls/ subcontrol panel (FINE: mechanical center)</p> <p>TRIG: TSG271 BLACK</p>
<p>Step 2</p>	<p>VIDEO OUT 1/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Align the sync phase in CH-B with that in CH-A.</p>	<p>SYNC (FINE) control/ subcontrol panel</p>
<p>Step 3</p> <ul style="list-style-type: none"> <li>• VIDEO sw/subcontrol panel: MANUAL</li> </ul> <p>• After adjustment is completed, set S1 on the EN-48P(A-3) board to OFF and VIDEO switch to PRESET.</p>	<p>VIDEO OUT 1/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <div style="display: flex; justify-content: space-around;"> <div> <p>CH-1/CH-2 (Y/B-Y)</p>  </div> <div> <p>CH-1/CH-3 (Y/R-Y)</p>  </div> </div> <p>Minimized the dip point Adjust the dip point to the center marker. Y/B-Y: <math>0 \pm 10</math> nsec</p> <p>When the adjustment cannot be performed using RV15, the adjustment should be performed by moving the short to SL21, SL22 or SL23.</p>	<p>RV15/V0-18P(C-4)</p> <p>VIDEO control/subcontrol panel</p> <p>TRIG: TSG271 BLACK</p>

# 14-2-5. PB Composite Y/C Delay Adjustment

【Connection】



## 【Switch Setting】

• 1485R WFM

SYNC : EXT

LINE SELECT : 15 LINE

FIELD : 1+3 ↔ 2+4

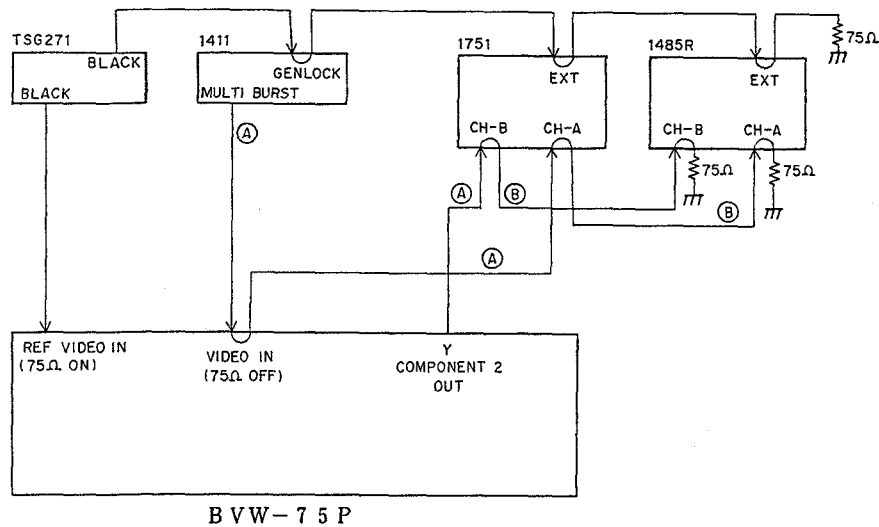
BVW-75P

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• Play back a bowtie &amp; 10T signal on alignment tape CR5-1B PS.</li> <li>• CHROMA control/subcontrol panel: MANUAL</li> </ul>	<p>VIDEO OUT 1/connector panel</p> <p>Adjust the LINE SELECT control of the waveform monitor so that the following waveform appears.</p> <p>When the specification is not satisfied, the adjustment should be performed shorting or opening SL350 and SL351.</p> <p>Check that the waveform is flat by pressing FIELD 1+3 and 2+4 on the waveform monitor alternately.</p> <p>If the waveform is not flat, set it to the average of 1+3 and 2+4.</p>	<p>CHROMA control/subcontrol panel</p> <p>RV350/EN-48P(B-2)</p>
<ul style="list-style-type: none"> <li>• After adjustment is completed, set CHROMA switch to PRESET.</li> </ul>		

### 14-3. REC VIDEO PHASE ADJUSTMENT

#### 14-3-1. REC Component Video Phase Adjustment

##### 【Connection】



The length of the cables marked with ① should be all the same.

The length of the cables marked with ② should be all the same.

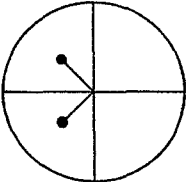
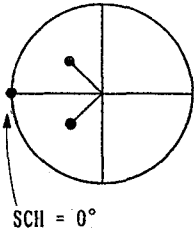
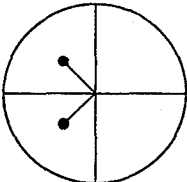
##### 【Switch setting】

- 1751 Waveform vector monitor
  - MODE : WFM ↔ SCH
  - INPUT : A ↔ B

- 1485R WFM
  - RESPONSE : FLAT
  - INPUT : A - B
  - VOLTS FULL SCALE: 0.5
  - MAG : 10 μsec
  - DISPLAY : 10 μsec
  - LINE SELECTOR : OFF
  - SYNC : EXT

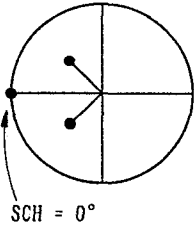
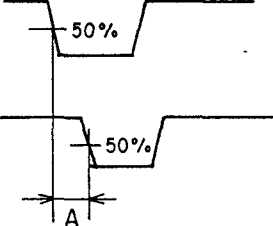
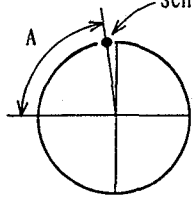
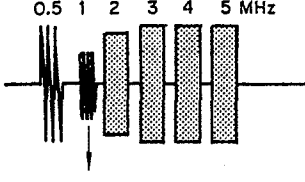
1411:

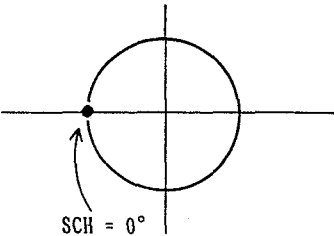
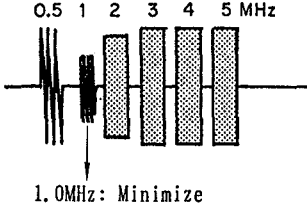
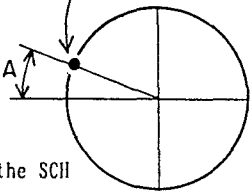
SYNCHRONIZATION...GENLOCK  
HORIZONTAL LOCK...SYNC

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a multi burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> </ul>	<p>VIDEO IN THROUGH OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-A</p>  <p>• Adjust the burst phase using the waveform vector monitor's PHASE control to scale marker.</p>	<p>PHASE control/waveform vector monitor</p>
<p>Step 2</p>	<p>VIDEO IN THROUGH OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-A</p>  <p>SCH = 0°</p>	<p>SUBCARRIER control/1411 signal generator</p>
<p>Step 3</p>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p>  <p>• Adjust the burst phase using the SC control to scale marker.</p>	<p>SC control/ subcontrol panel</p>



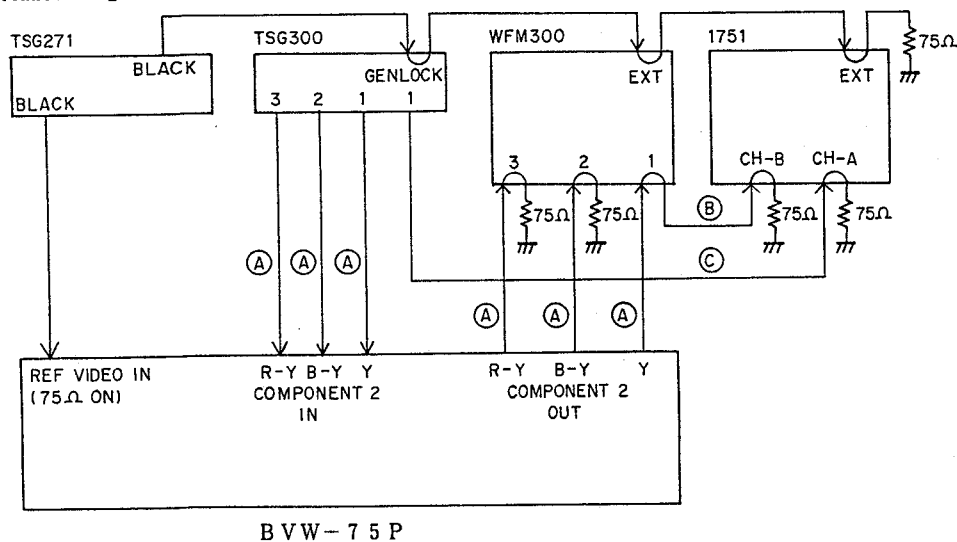
|||||

<p>Step 4</p>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p>  <p>SCH = 0°</p>	<p>SYNC (FINE) control/ subcontrol panel</p>
<p>Step 5</p>	<p>VIDEO IN THROUGH OUT/connector panel COMPONENT 2 Y OUT/connector panel (WFM MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-A</p>  <p>CH-B</p> <p>50%</p> <p>50%</p> <p>A</p> <p>A = 0</p> <p>Check the sync phase Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF</p>	
<p>Step 6</p>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>SCH</p> <p>A</p> <p>A = 84 ± 5°</p>	<p>SYNC (FINE) control/ subcontrol panel</p>
<p>Step 7</p>	<p>COMPONENT 2 Y OUT/connector panel (WFM)</p>  <p>0.5 1 2 3 4 5 MHz</p> <p>1.0 MHz: Minimize</p>	<p>RV502/DEC-42P(E-5)</p>

<p>Step 8</p>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p>  <p>SCH = 0°</p>	<p>SYNC (FINE) control/ subcontrol panel</p>
<p>Step 9</p> <ul style="list-style-type: none"> <li>• Supply a multi burst signal to the VIDEO IN connector.</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Insert the BCT-30M cassette tape.</li> <li>• MODE: REC/PB</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel (WFM)</p> <p>CHA - CHB</p>  <p>1.0MHz: Minimize</p>	<p>SYNC (FINE) control/ subcontrol panel</p>
<p>Step 10</p> <ul style="list-style-type: none"> <li>• MODE: REC/PB</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>SCH CH-B</p>  <p>Check the SCH</p> <p><math>A = 0 \pm 0.5^\circ</math></p> <p>If the specification is not satisfied, readjust according to Step 6 and repeat the above steps.</p>	

## 14-3-2. REC Component Y/C, C/C Delay Adjustment

### 【Connection】



The length of the cables marked with (A) should be all the same.

$$(C) = (B) + (A) \times 2$$

### 【Switch Setting】

#### • 1751 Waveform vector monitor

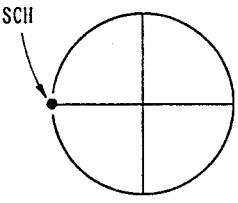
MODE : WFM ↔ SCH  
 INPUT : A ↔ B  
 SWEEPS : 2H MAG  
 DC RESET : OFF  
 FILTERS : FLAT  
 CAL : OFF  
 EXT REF : ON  
 FIELD SELECT : OFF  
 GAIN : NORMAL  
 LINE SELECTOR : OFF

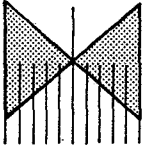
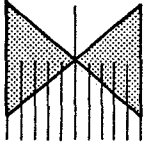
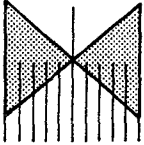
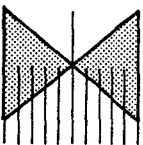
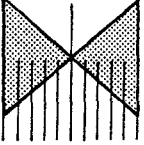
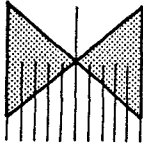
#### • WFM 300 Component WFM

MODE : BOWTIE  
 VERTICAL GAIN : × 5  
 HORIZONTAL MAG : OFF

#### • TSG 300

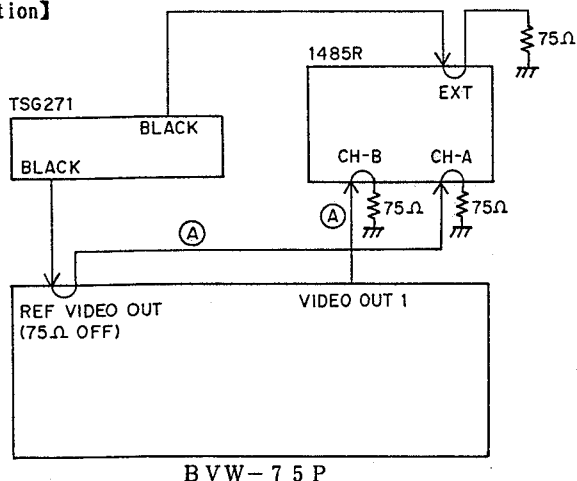
3 WIRE MODE  
 50% BOWTIE

machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>INPUT SELECT sw: Y-R, B</li> <li>Supply a 50% bowtie signal to the COMPONENT 2 IN connector.</li> <li>MODE: EE</li> <li>Insert the BCT-20M cassette tape.</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel                      (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF)                      Align the SCH in CH-B with that in CH-A.</p>	<p>SYNC (FINE) control/                      subcontrol panel</p> <p>TRIG: TSG271 BLACK</p>

<p>Step 2</p> <ul style="list-style-type: none"> <li>• CHROMA sw/subcontrol panel: MANUAL</li> </ul>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>CH-1/CH-2 (Y/B-Y)</p>  </div> <div style="text-align: center;"> <p>CH-1/CH-3 (Y/R-Y)</p>  </div> </div> <p>Minimized the dip point. Adjust the dip point to the center marker. Y/R-Y: <math>0 \pm 10 \text{ nsec}</math></p>	<p>CHROMA control/ subcontrol panel RV504/DEC-42P(D-7)</p>
<p>Step 3</p>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>CH-1/CH-2 (Y/B-Y)</p>  </div> <div style="text-align: center;"> <p>CH-1/CH-3 (Y/R-Y)</p>  </div> </div> <p>Adjust the dip point to the center marker. Y/B-Y: <math>0 \pm 10 \text{ nsec}</math></p>	<p>RV200/DEC-42P(B-1)</p>
<p>Step 4</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: Y-R, B</li> <li>• Supply a 50% bowtie signal to the COMPONENT 2 IN connector.</li> <li>• MODE: REC/PB</li> </ul> <p>• After adjustment is completed, set CHROMA switch to PRESET.</p>	<p>COMPONENT 2 OUT/connector panel (BOWTIE MODE/COMPONENT WFM)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>CH-1/CH-2 (Y/B-Y)</p>  </div> <div style="text-align: center;"> <p>CH-1/CH-3 (Y/R-Y)</p>  </div> </div> <p>• Check the dip point to the center marker. Y/B-Y: <math>0 \pm 20 \text{ nsec}</math>      Y/R-Y: <math>0 \pm 20 \text{ nsec}</math></p>	

### 14-3-3. Burst Position Adjustment

#### 【Connection】



#### 【Switch setting】

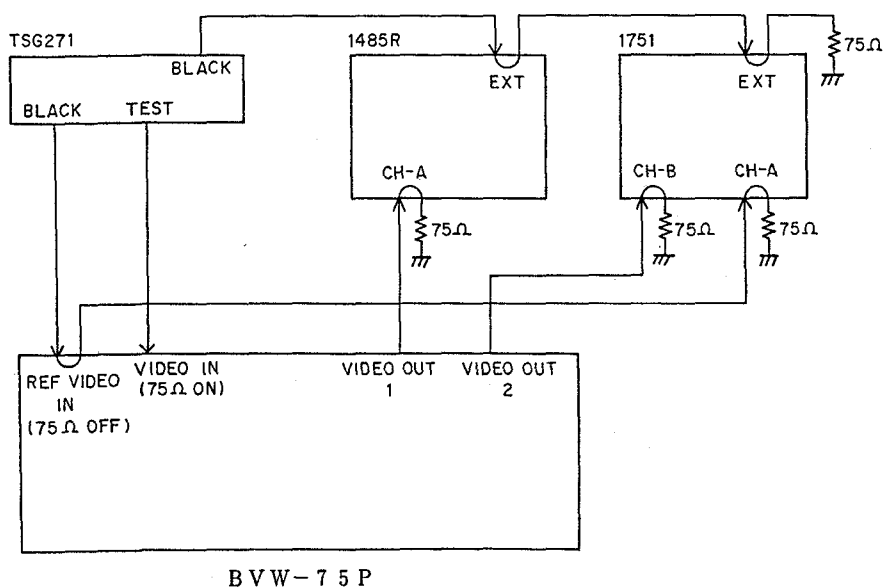
1485R WFM  
 RESPONSE : FLAT  
 INPUT : A - B  
 VOLTS FULL SCALE : 0.2  
 MAG : 0.2  
 DISPLAY : 10  $\mu$ sec  
 LINE SELECTOR : OFF  
 SYNC : EXT

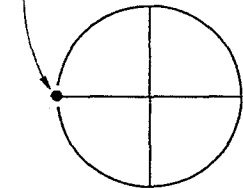
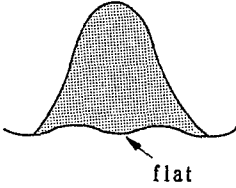
The length of the cables marked with  
 Ⓐ should be all the same.

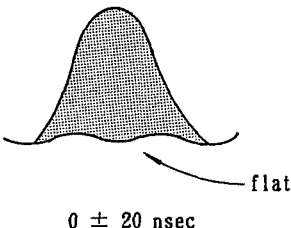
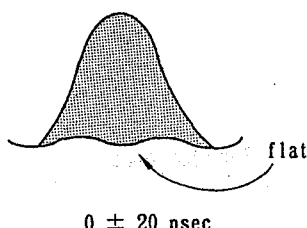
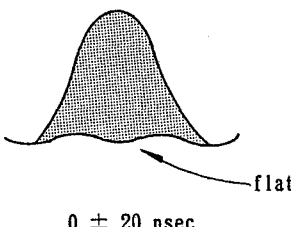
machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> • Supply a black burst signal to the REF. VIDEO IN connector. • MODE: EE	VIDEO OUT 1/connector panel (Terminated in 75 ohms.) (A-B MODE/WFM) 	SYNC (FINE) control/ subcontrol panel
<b>Step 2</b>		SC control/subcontrol
<b>Step 3</b>	 When the left portion in the burst signal is distorted, the adjustment should be performed. When it is not distorted, the adjustment may not be performed. When both the left and right waveforms are distorted, readjust Sec. 12-6-3.	ⒶRV27/EN-48P(C-2)
<b>Step 4</b>		ⒶRV12/EN-48P(C-2)
<b>Step 5</b>		ⒶRV13/EN-48P(C-2)

#### 14-3-4. REC Composite Y/C Delay Adjustment

##### 【Connection】



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a pulse &amp; bar signal to the VIDEO IN connector.</li> <li>• CHROMA sw/subcontrol panel: MANUAL</li> <li>• Insert the BCT-20M cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>REF. VIDEO IN THROUGH OUT/connector panel VIDEO OUT 2/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF) Adjust the SCH in CH-B with that in CH-A.</p>	SC control/subcontrol panel
<p>Step 2</p> <ul style="list-style-type: none"> <li>• CAPSTAN LOCK sw: Set the CAPSTAN LOCK switch to 2FD and 8FD repeatedly, and then to 2FD.</li> </ul>	<p>VIDEO OUT 1/connector panel (10T)</p> 	RV16/DEC-46P(E-2)

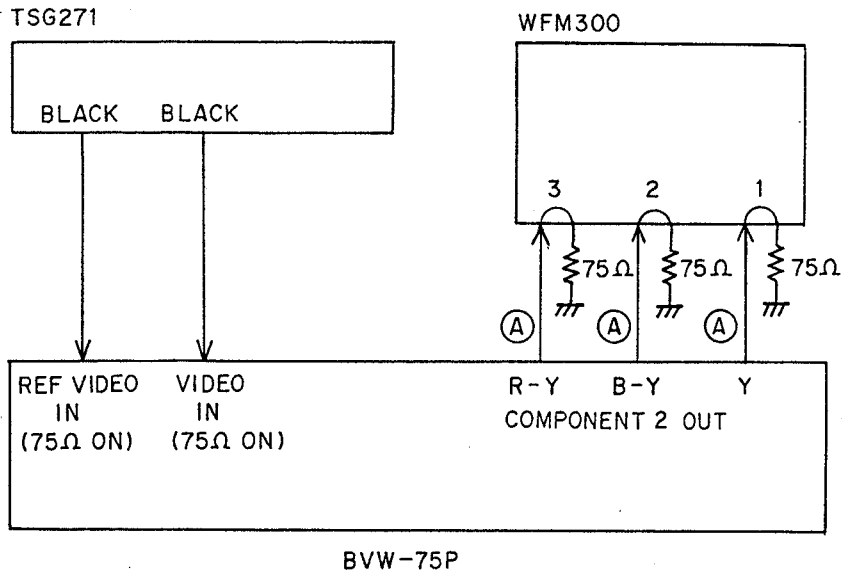
<p>Step 3</p> <ul style="list-style-type: none"> <li>• MODE: REC/PB</li> </ul> <p>• After adjustment is completed, put out the BCT-20M cassette tape.</p>	<p>VIDEO OUT 1/connector panel</p>  <p>0 ± 20 nsec</p> <ul style="list-style-type: none"> <li>• If the specification is not satisfied, readjust according to Step 2 and repeat the above steps.</li> </ul>	
<p>Step 4</p> <ul style="list-style-type: none"> <li>• Insert the BCT-20G cassette tape.</li> <li>• MODE: EE</li> </ul>	<p>VIDEO OUT 1/connector panel</p>  <p>0 ± 20 nsec</p>	<p>CHROMA control/subcontrol panel</p> <p>● CV1/DUS-288/DEC-46P(D-2)</p>
<p>Step 5</p> <ul style="list-style-type: none"> <li>• MODE: REC/PB</li> </ul> <p>• After adjustment is completed, set CHROMA switch to PRESET.</p>	<p>VIDEO OUT 1/connector panel</p>  <p>0 ± 20 nsec</p> <ul style="list-style-type: none"> <li>• If the specification is not satisfied, readjust according to Step 4 and repeat the above steps.</li> </ul>	

## 14-4. PB COLOR FRAMING ADJUSTMENT

### 14-4-1. ID Mix Pulse Adjustment

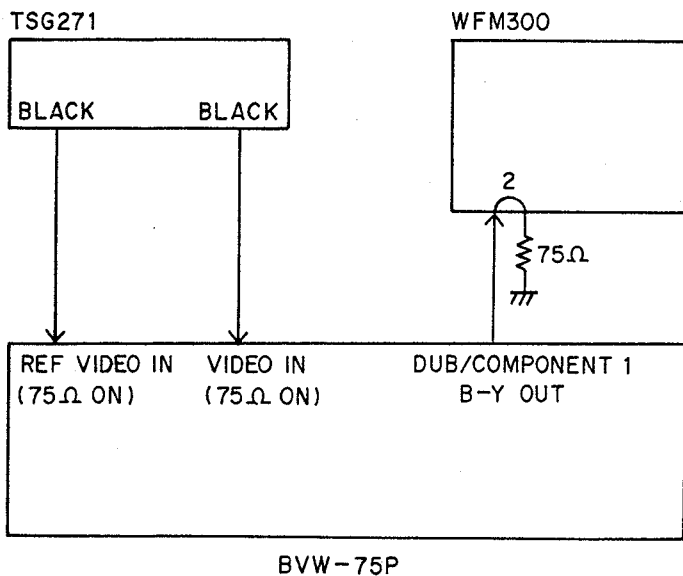
#### 【Connection】

Fig 1



The length of cables marked with Ⓐ should be all the same.

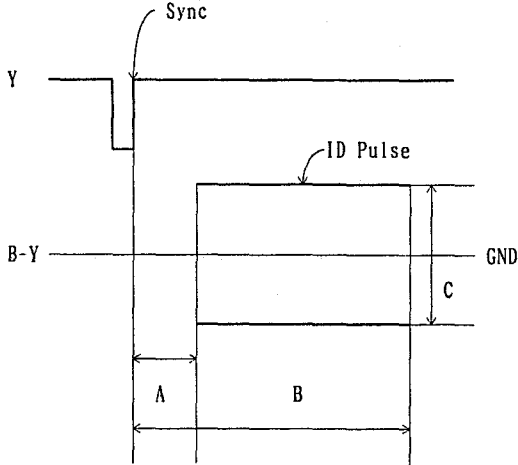
Fig 2



#### 【Switch setting】

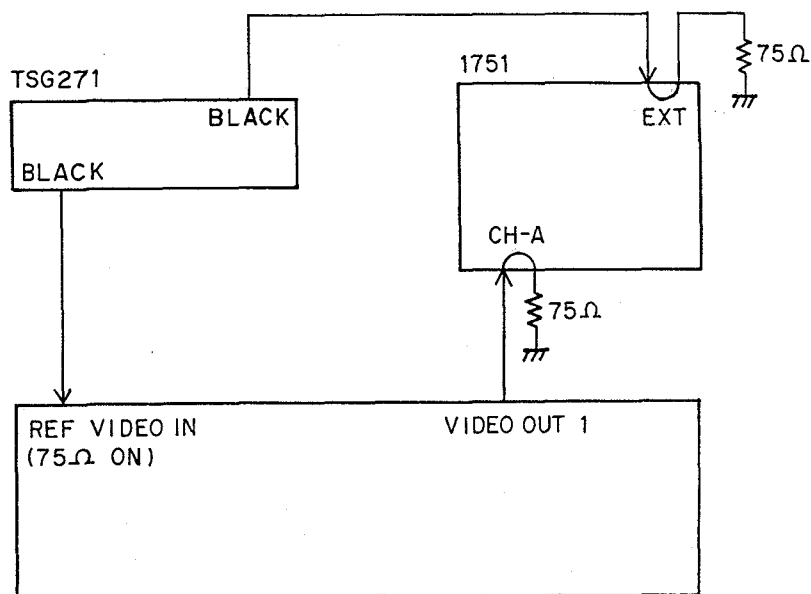
- WFM 300 component WFM  
MODE : WFM RERERENCE INT



machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• CAPSTAN LOCK sw: 8FD</li> <li>• S2/EN-48P(A-2): ON</li> <li>• CONNECTION: Fig 1</li> </ul>	<p>COMPONENT 2 Y OUT/connector panel COMPONENT 2 B-Y OUT/connector panel (WFM MODE/COMPONENT WFM)</p>  <p> <math>A = 8 \pm 1 \mu \text{sec}</math>  <math>B = 55 \pm 1 \mu \text{sec}</math>  <math>C = 0.525 \pm 0.02 \text{ Vp-p}</math> </p>	<ul style="list-style-type: none"> <li>• For A RV25/EN-48P(D-2)</li> <li>• For B RV26/EN-48P(D-2)</li> <li>• For C RV35/EN-48P(F-5)</li> </ul> <p>TRIG: INT</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• CONNECTION: Fig 2</li> </ul> <p>• After adjustment is completed, Set S2 on the EN-48P(A-2) board to OFF.</p> <p>• After adjustment is completed, set CAPSTAN LOCK switch to 2FD.</p>	<p>DUB/COMPONENT 1 B-Y OUT/connector panel</p> <p><math>C = 0.525 \pm 0.02 \text{ Vp-p}</math></p>	<p>RV36/EN-48P(E-5)</p>

## 14-4-2. SC Phase Adjustment

### 【Connection】

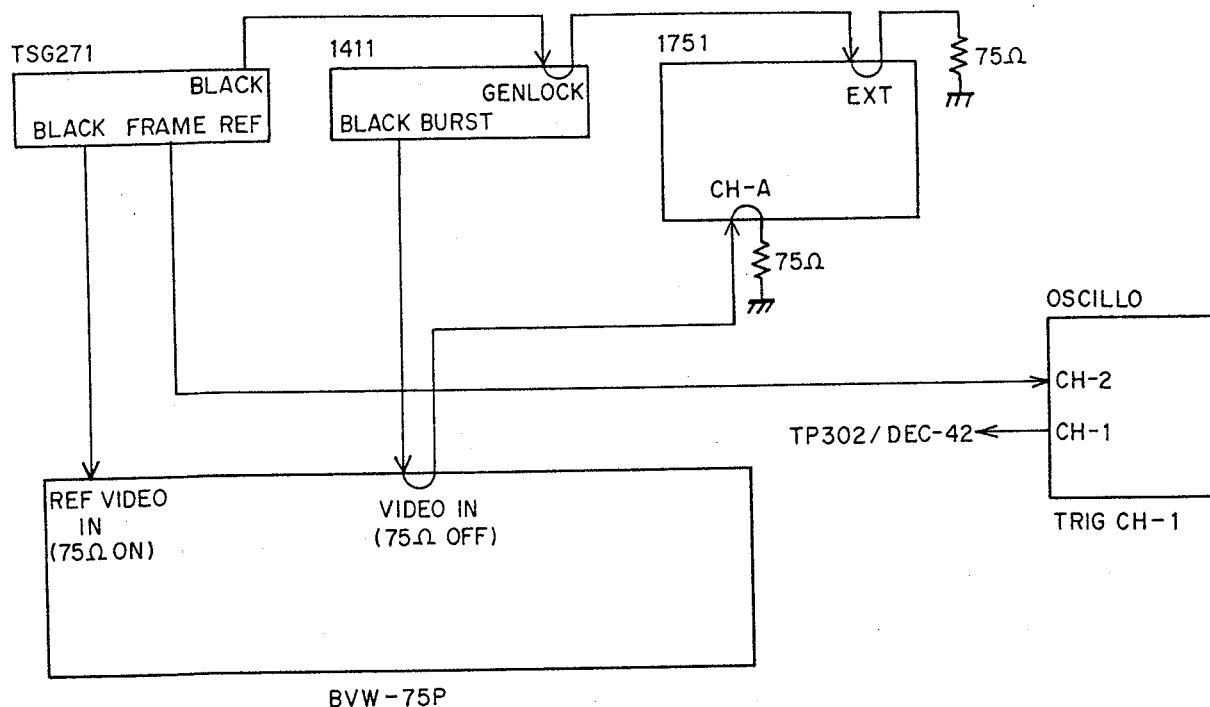


BVW-75P

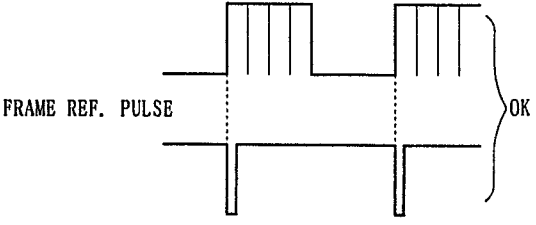
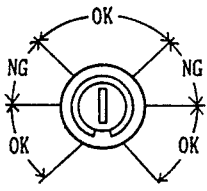
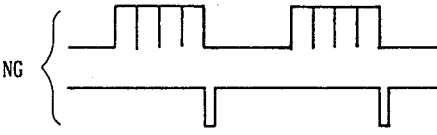
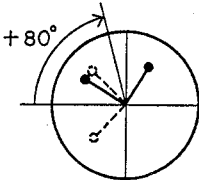
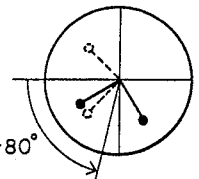
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a black burst signal to the REF. VIDEO IN connector.</li> <li>• Set the burst phase on the circumference in GAIN <math>\times 5</math> and UNCAL modes.</li> <li>• Fully turn the SC control on the subcontrol panel and RV17 on the EN-48P board counterclockwise.</li> <li>• Using RV17 on the EN-48P board, preset to the position in which the burst is locked.</li> <li>• MODE: EE</li> </ul>	<p>VIDEO OUT 1 connector (Terminated in 75 ohms.) (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>Preset position in which the burst is locked.</p> <p>Delay the burst by 10 degrees using RV17 on the EN-48P board by turning it clockwise.</p>	<p>RV17/EN-48P(D-1)</p> <p>TRIG: TSG271 BLACK</p>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• Turn the SC control to measure the SC phase variable range.</li> </ul>	<p>The control change should be 360° or more.</p>	<p>SC control/subcontrol panel</p> <p>TRIG: TSG271 BLACK</p>

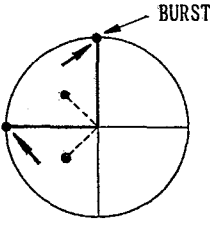
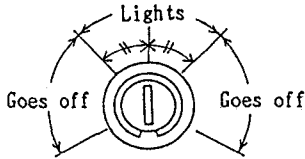
### 14-4-3. Decoder Field Pulse Adjustment

#### 【Connection】



machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>INPUT SELECT sw: COMPOSITE</li> <li>CAPSTAN LOCK sw: 2FD</li> <li>Supply a black burst signal to the VIDEO IN connector.</li> </ul>	<p>VIDEO IN THROUGH OUT/connector panel (Terminated in 75 ohms.) (SCH MODE/WAVEFORM VECTOR MONITOR)</p> <p>SCH = 0°</p> <ul style="list-style-type: none"> <li>Adjust so that the burst phase coincides with the vector marker.</li> </ul>	<ul style="list-style-type: none"> <li>BURST PHASE control/waveform vector monitor</li> <li>SCH SUBCARRIER control/1411 signal generator</li> </ul>

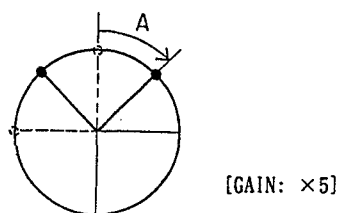
<p>Step 2</p>	<p>TP302/DEC-42P(F-3)</p>  <p>FRAME REF. PULSE</p> <p>• Adjust so that a FRAME REF. pulse signal outputs at the leading edge of TP302.</p>  <p>At this time, the waveform is OK when RV506 is set to be within the three ranges shown in the figure below.</p> <p>However, align RV506 to be in the middle of the OK range which is closest to mechanical center.</p> 	<p>RV506/CF-36P on the DEC-42P board.</p>
<p>Step 3</p>	<p>VIDEO IN THROUGH OUT/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>Be sure that the waveform should be OK when the burst phase is set at +80 degrees.</p>  <p>Be sure that the waveform should be OK when the burst phase is set at -80 degrees.</p> <p>• If the specification is not satisfied, adjusted to RV506 and repeat the above steps.</p>	<p>SUBCARRIER control/ 1411 signal generator</p>

<p>Step 4</p>	<p>VIDEO IN THROUGH OUT/connector panel (VECT MODE/WAVEFORM VECTOR MONITOR)</p>  <p>[GAIN: x5]</p>	<p>GAIN uncal control/ waveform vector monitor PHASE control/ waveform vector monitor</p>
<p>Step 5</p>	<p>Turn the SCH IN lamp on the front panel on.</p> <p>Set RV507 to the center of the range in which the lamp lights.</p> 	<p>RV507/CF-36P on the DEC-42P board.</p>

Step 6

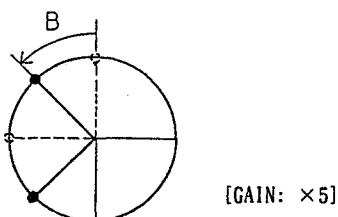
VIDEO IN THROUGH OUT/connector panel  
(VECT MODE/WAVEFORM VECTOR MONITOR)

SUBCARRIER control/  
1411 signal generator



A is the angle of the burst when the SUBCARRIER control is stopped just before the SCH IN lamp goes out after having lit while rotating the burst phase to the right.

$$A = 40 \pm 10^\circ$$



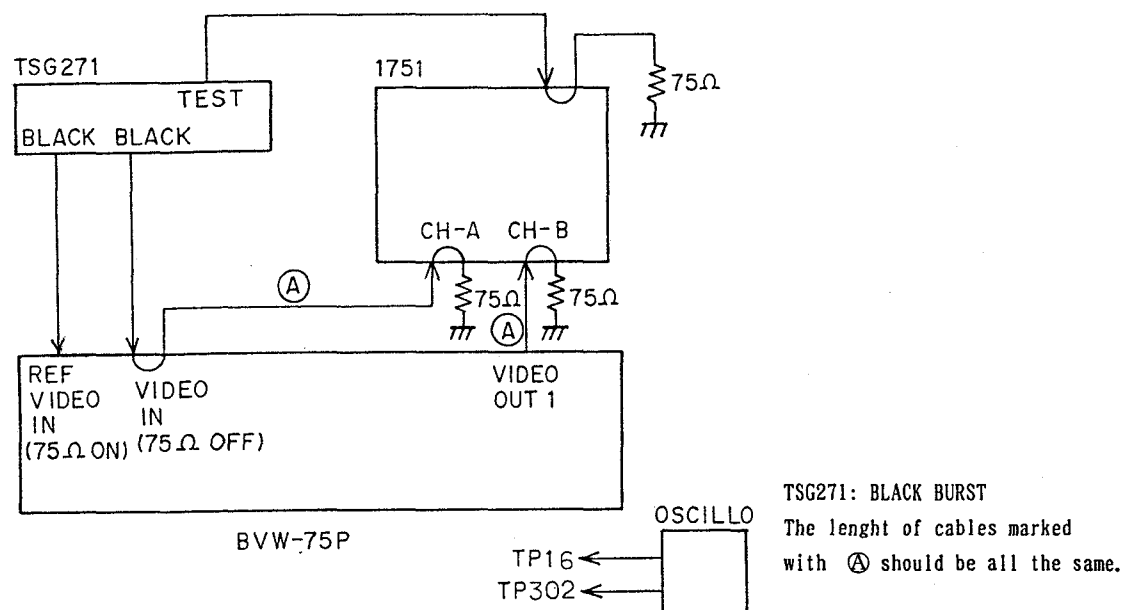
B is the angle of the burst when the SUBCARRIER control is stopped just before the SCH in lamp goes out after having lit while rotating the burst phase to the left.

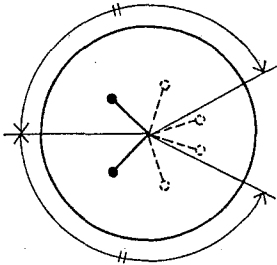
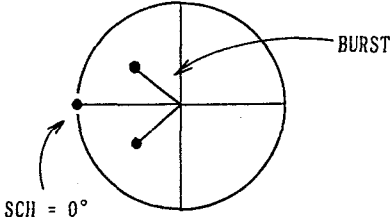
$$B = -40 \pm 10^\circ$$

If the specification is not satisfied, adjusted to RV507 and repeat the above steps.

#### 14-4-4. Encoder Field Pulse Adjustment

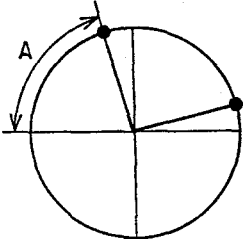
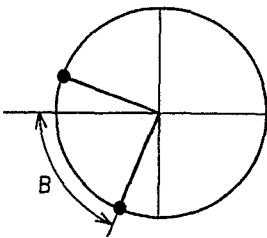
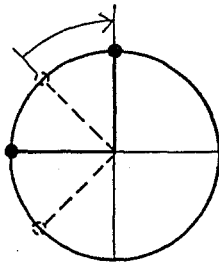
##### 【Connection】



machine conditions for adjustment	specifications	adjustments
<b>Step 1</b> <ul style="list-style-type: none"> <li>Supply a black burst signal to the VIDEO IN connector.</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>CAPSTAN LOCK sw: 2FD</li> <li>MODE: EE</li> </ul>	VIDEO OUT 1/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)  CH-B  <p>Adjust so that the burst phase is set to the center of the range when the SC control is turned clockwise and counterclockwise.</p>	SC control/ subcontrol panel         TRIG: TSG271 BLACK
<b>Step 2</b>	VIDEO OUT 1/connector panel (SCH MODE/WAVEFORM VECTOR MONITOR)  CH-B  <p>Adjust so that the burst phase coincides with the vector marker.</p>	PHASE control/waveform vector monitor SYNC control/ subcontrol panel


<p>Step 3</p>	<p>TP302/DEC-42P(F-3) TP16/EN48P(A-2)</p> <div> </div> <p>Adjust so that the waveform is OK.</p> <div> </div> <p>At this time, the waveform is OK when RV19 is set to be with in the three ranges shown in the figure below. However, align RV19 to be in the middle of the OK range which is closest to mechanical center.</p>	<p>●RV19/EN-48P(C-2)</p> <p>TRIG: TP302/DEC-42P(F-3)</p>
<p>Step 4</p>	<p>VIDEO OUT 1/connector panel (VECT MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p> <div> </div>	<p>PHASE control/waveform vector monitor GAIN uncal control/waveform vector monitor</p>



<p>Step 5</p>	<p>VIDEO OUT 1/connector panel (VECT MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p>  <p>A is the angle of the burst when the waveform on the oscilloscope is just about to change from OK to NG while rotating the burst phase clockwise.</p> <p>CH-B</p>  <p>B is the angle of the burst when the waveform on the oscilloscope is just about to change from OK to NG while rotating the burst phase counterclockwise.</p> <p><math>A = B \pm 5^\circ</math></p> <p>When the specification is not satisfied, adjust RV19 finely and readjust the above steps.</p>	<p>SC control/subcontrol panel</p>
<p>Step 6</p>	<p>VIDEO OUT 1/connector panel (VECT MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p>  <p>[GAIN: <math>\times 5</math>]</p>	<p>PHASE control/waveform vector monitor</p>

<p>Step 7</p>	<p>Turn the SCH OUT lamp on the front panel on. Set RV20 to the center of the range in which the lamp lights.</p> <div> </div>	<p>●RV20/EN-48P(C-2)</p>
<p>Step 8</p>	<p>VIDEO OUT 1/connector panel (VECT MODE/WAVEFORM VECTOR MONITOR)</p> <p>CH-B</p> <div> <p>[GAIN: ×5]</p> </div> <p>A is the angle of the burst when the SC control is stopped just before the SCH OUT lamp goes out after having lit while totating the burst phase to the right.</p> $A = 40 \pm 10^\circ$ <p>CH-B</p> <div> <p>[GAIN: ×5]</p> </div> <p>B is the angle of the burst when the SC control is stopped just before the SCH OUT lamp goes out after having lit while rotating the burst phase to the left.</p> $B = -40 \pm 10^\circ$ <p>When the specification is not satisfied, adjust RV20 finely and readjust the above steps.</p>	<p>SC control/subcontrol panel</p>

# 14-4-5. REGEN. VISC Level Adjustment

machine conditions for adjustment	specifications	adjustments
<ul style="list-style-type: none"> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• Supply a black burst signal to the REF. VIDEO IN and VIDEO IN connector.</li> <li>• CAPSTAN LOCK sw: 8FD</li> <li>• S500-Bit 4/TBC-12P: ON</li> <li>• S4-Bit 8/TBC-9P: ON</li> <li>• S4, S5/V0-18P: ON</li> </ul>	<p>DUB/COMPONENT 1 OUT, pin 1 (Terminated in 75 ohms.) (WFM MODE/WAVEFORM VECTOR MONITOR) (LINE SELECTOR: LINE 8)</p>  <p>A (SETUP level) = <math>200 \pm 5</math> mVp-p B (VISC level) = <math>300 \pm 5</math> mVp-p</p>	<ul style="list-style-type: none"> <li>• SETUP level     RV701/V0-18P(A-3)</li> <li>• VISC level     RV700/V0-18P(A-3)</li> </ul>
<ul style="list-style-type: none"> <li>• After adjustment is completed, return the above switches to the former position.</li> </ul>	<p>COMPONENT 2 Y OUT (Terminated in 75 ohms.)</p> <p>A (SETUP level) = <math>200 \pm 5</math> mVp-p B (VISC level) = <math>300 \pm 5</math> mVp-p</p>	<ul style="list-style-type: none"> <li>• SETUP level     RV704/V0-18P(B-3)</li> <li>• VISC level     RV703/V0-18P(A-3)</li> </ul> <p>TRIG: INT</p>

# 14-5. VISC ADJUSTMENT

【Connection】

Fig 1

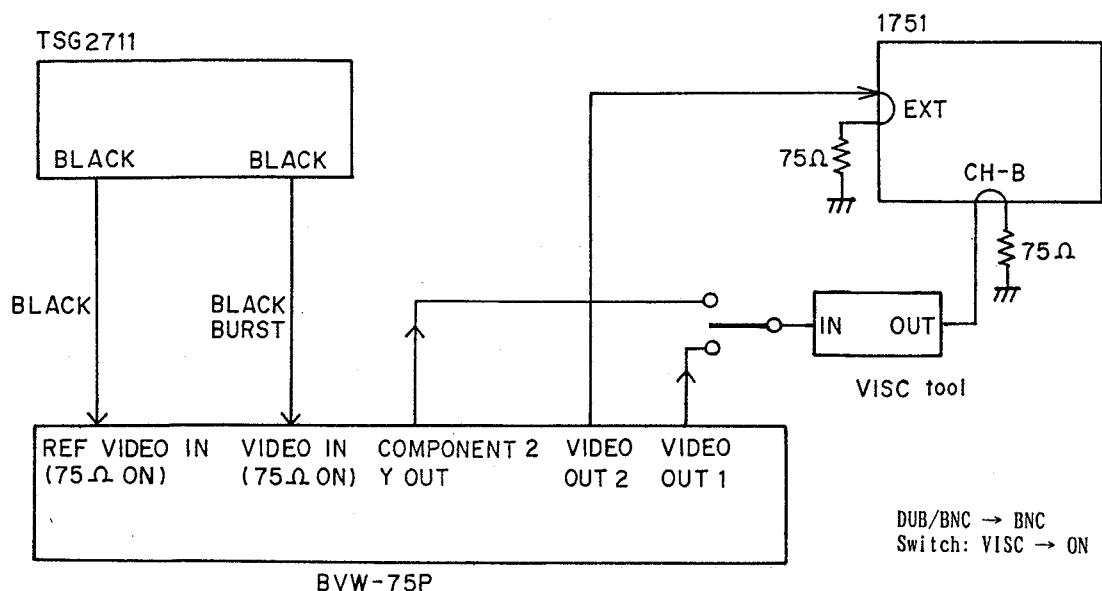
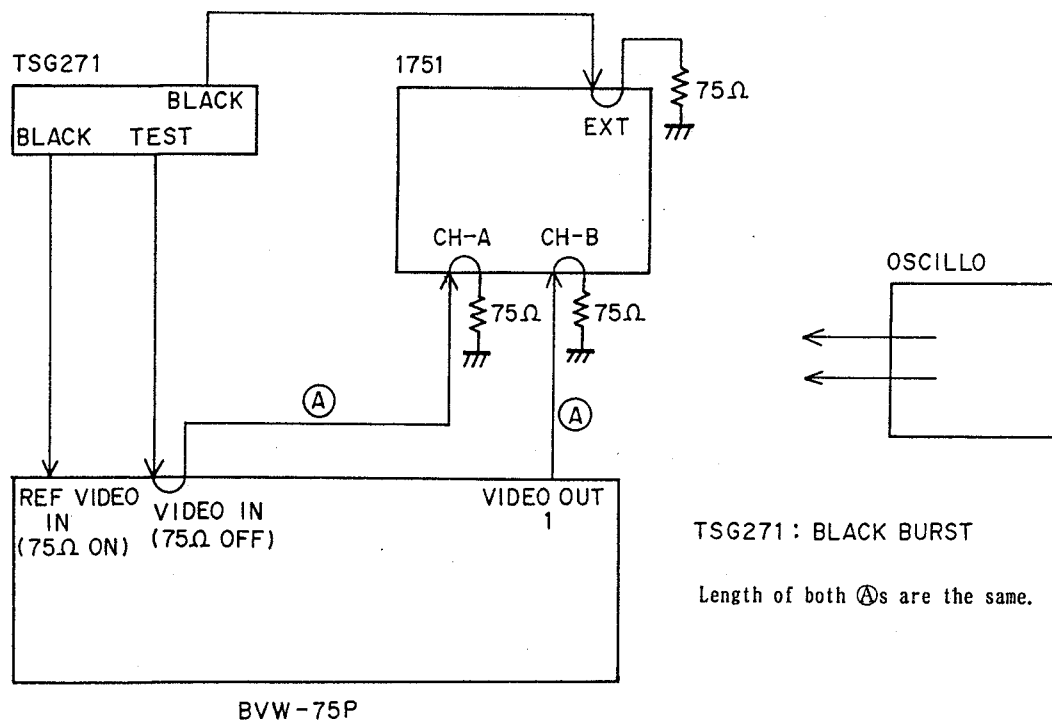
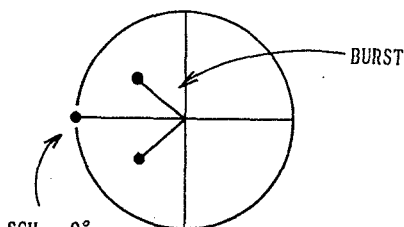
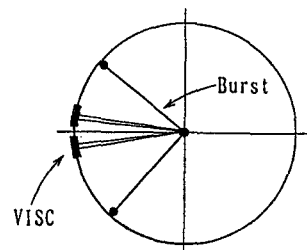
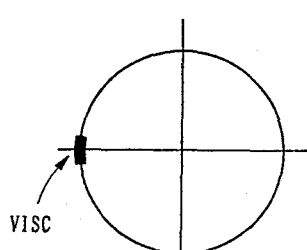


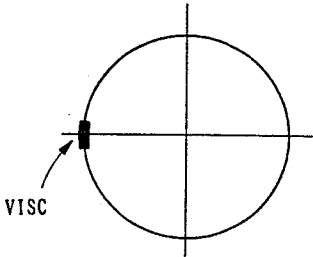
Fig 2



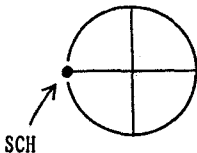
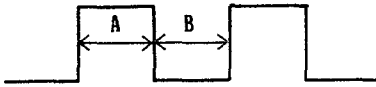
# 14-5-1. VISC Phase Adjustment

Input/output SCH should be 0°.

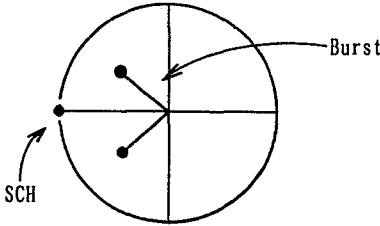
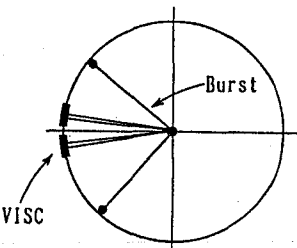
machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a black burst signal to the VIDEO IN and the REF.VIDEO IN connectors.</li> <li>• CAPSTAN LOCK sw: 8FD</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• S3-Bit 1 to Bit 8/TBC-9P: OFF</li> <li>• S4-Bit 1 to S4-Bit 7/TBC-9P: OFF</li> <li>• S500-Bit 4/TBC-12P: ON</li> <li>• S4-Bit 8/TBC-9P: ON</li> <li>• CONNECTION: Fig 1</li> <li>• S4/VO-18P: OFF</li> </ul>	<p>VIDEO OUT 1 through VISC tool (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>SCH = 0°</p> <p>Adjust so that the burst phase coincides with the vector marker.</p>	<ul style="list-style-type: none"> <li>• BURST PHASE control/waveform vector monitor</li> <li>• SCH SC control/subcontrol panel</li> </ul>
<p>Step 2</p>	<p>VIDEO OUT 1 through VISC tool (VECT MODE/WAVEFORM VECTOR MONITOR) [LINE SELECTOR: LINE 8]</p>  <p>[GAIN: ×5 UNCAL]</p> <p>Set the VISC phase to 0 degree (jitter center) Note: When the specification is not satisfied, move the short to R138, R140, R142 and R144.</p>	<p>RV701/EN-48P(G-1)</p> <p>TRIG: VIDEO OUT 2/ connector panel</p>
<p>Step 3</p>	<p>COMPONENT 2 Y OUT through VISC tool (VECT MODE/WAVEFORM VECTOR MONITOR) [LINE SELECTOR: LINE 8]</p>  <p>VISC</p> <p>Set the VISC to 0° . (jitter center)</p>	<p>PHASE control/waveform vector monitor</p> <p>TRIG: VIDEO OUT 2/ connector panel</p>

<p>Step 4</p> <ul style="list-style-type: none"> <li>• S4/VO-18P: ON</li> </ul> <p>• After adjustment is completed, return the above switches to the former position.</p>	<p>COMPONENT 2 Y OUT through VISC tool (VECT MODE/WAVEFORM VECTOR MONITOR) [LINE SELECTOR: LINE 8]</p>  <p>Set the VISC to 0°.</p> <p>When the specification is not satisfied, move the short to R139, R141, R143, R145.</p>	<p>RV702/EN-48P(G-1)</p> <p>TRIG: VIDEO OUT 2/ connector panel</p>
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# 14-5-2. VISC Duty Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>Supply a black burst signal to the VIDEO IN connector.</li> <li>INPUT SELECT sw: COMPOSITE</li> <li>CAPSTAN LOCK sw/subcontrol panel: 8FD</li> <li>MODE: EE</li> <li>CONNECTION: Fig 2</li> </ul>	<p>VIDEO OUT 1/connector panel (SCH MODE/WAVEFORM VVECTOR MONITOR)</p>  <p>Check that the phase on CH-B coincides with that on CH-A when the CH-A and CH-B switches are pressed alternately. (CH-A REF) Adjust so that the SCH phase on CH-B coincides with that on CH-A.</p>	<p>SYNC(FINE)control/ subcontrol panel</p>
<p>Step 2</p> <p>• After adjustment is completed, set CAPSTAN LOCK switch to 2FD.</p>	<p>TP701/EN-48P(F-2)</p>  <p><math>A = B \pm 2 \%</math></p>	<p>RV703/EN-48P(G-1)</p> <p>TRIG: INT</p>

### 14-5-3. Decoder VISC Phase Adjustment

machine conditions for adjustment	specifications	adjustments
<p>Step 1</p> <ul style="list-style-type: none"> <li>• Supply a black burst signal to the VIDEO IN connector.</li> <li>• CONNECTION: Fig 1</li> <li>• INPUT SELECT sw: COMPOSITE</li> <li>• MODE: EE</li> <li>• CAPSTAN LOCK sw: 2FD</li> <li>• S500-Bit 4/TBC-12P: ON</li> <li>• S3-Bit 1 to S3-Bit8/TBC-9P: OFF</li> <li>• S4-Bit 1 to S4-Bit7/TBC-9P: OFF</li> <li>• S4-Bit 8/TBC-9P: ON</li> </ul>	<p>VIDEO OUT 1 through VISC tool (SCH MODE/WAVEFORM VECTOR MONITOR)</p>  <p>SCH = 0°</p> <p>Adjust so that the burst phase coincides with the vector marker.</p>	<ul style="list-style-type: none"> <li>• BURST PHASE control/waveform vector monitor</li> <li>• SCH SC control/subcontrol panel</li> </ul>
<p>Step 2</p> <ul style="list-style-type: none"> <li>• After adjustment is completed, return the above switches to the former position.</li> </ul>	<p>VIDEO OUT 1 through VISC tool (VECT MODE/WAVEFORM VECTOR MONITOR) [LINE SELECTOR: LINE 8]</p>  <p>[GAIN: ×5 UNCAL]</p> <p>Set the VISC phase to 0 degrees. (Jitter center)</p> <p>When the specification is not satisfied, move the short to SL3, SL4, SL5, SL6 or SL7.</p>	<p>RV510/CF-36P on the DEC-42P(E-7).</p> <p>TRIG: VIDEO OUT 2/ connector panel</p>